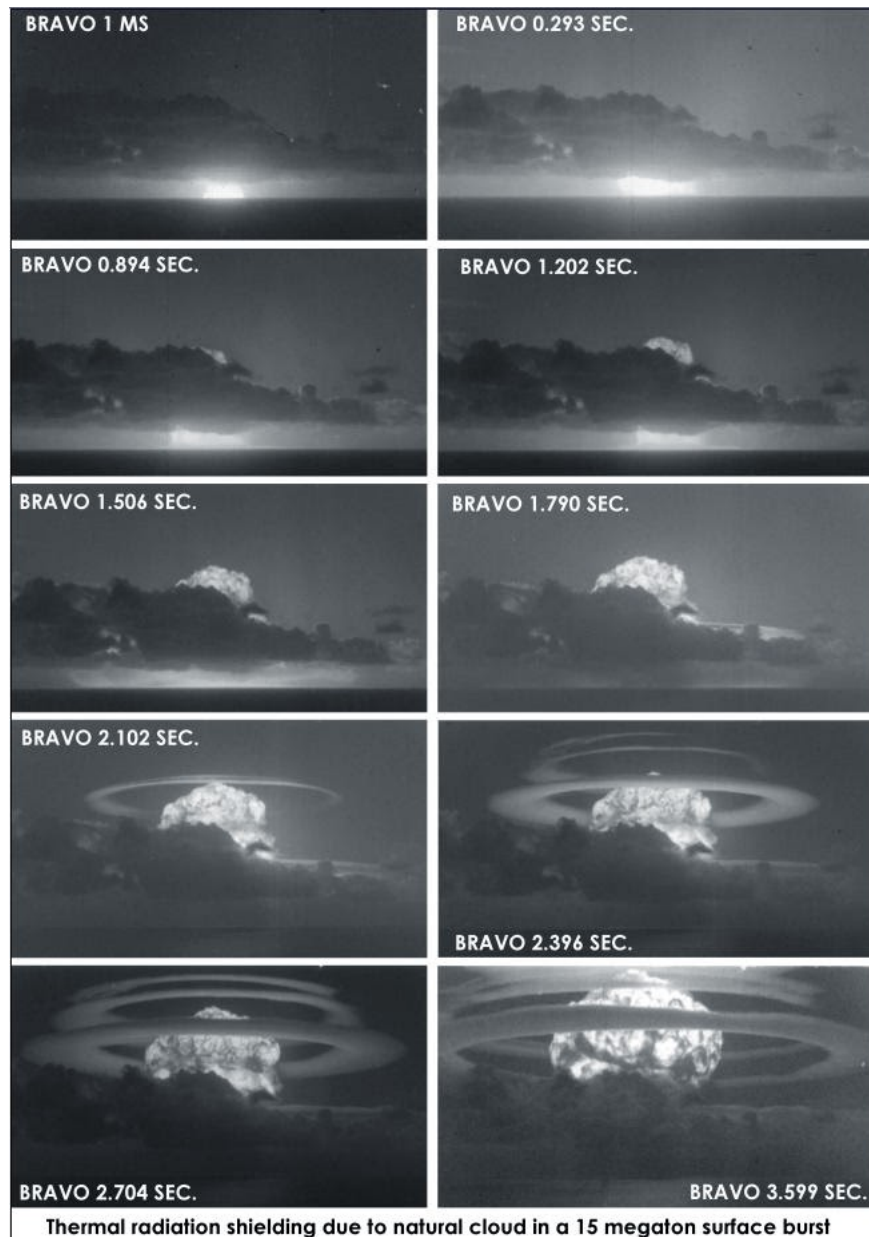


Effective countermeasures against conventional war and terrorist threats. Protection against collateral civilian damage and contamination in conventional, chemical and nuclear attack, with nuclear deterrence against conventional warfare which, as science and history prove beyond doubt, costs more lives than nuclear deterrence. The media who profit from censoring out both effective civil defense knowledge and the effective, safe, escalation-deterred nuclear deterrence of conventional warfare (as the W79 did in Europe in the 1980s), deliberately promulgate terror for cash, catering to politically-correct hate-based pseudo-science bigoted fashions.

Sunday, April 05, 2015

Photographed fireball shielding by cloud cover in the 15 megaton Bravo nuclear test, 1954

Following from the [discussion of urban skyline shielding of thermal radiation effects \(fires, burns\) by buildings in the previous post](#), please take a look at the cloud cover shielding of the Bravo fireball, seen from sea level:





15 Mt Castle Bravo fireball photographed at 75 nmi east of GZ, at 3.5 seconds after detonation, using an aircraft flying at 12,500 ft (i.e. ABOVE the cloud cover)

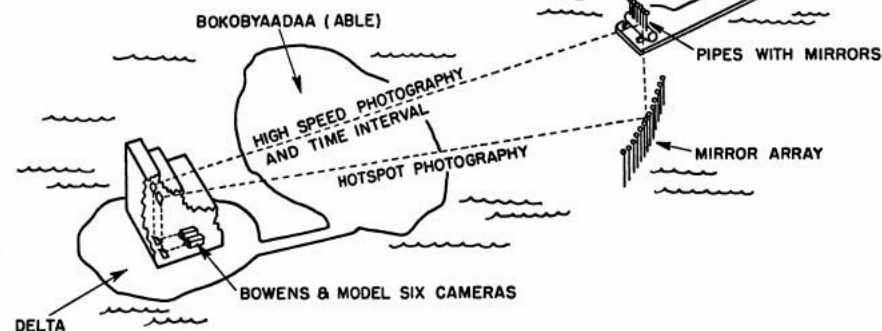


15 megatons: Bravo test, 1 March 1954, Bikini Atoll



**THE ONO BOOK
OPERATION CASTLE
Los Alamos Scientific Laboratory
1 October 1953**

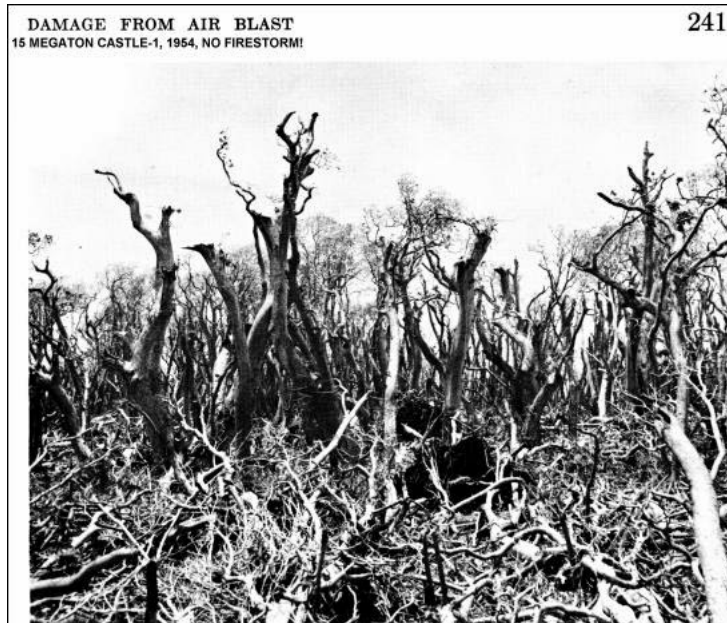
PROJECTS 13.4 & 13.5
HIGH SPEED PHOTOGRAPHY & TIME INTERVAL WITH BOWENS



This program will measure the time interval between fission and fusion reactions by measuring the time between appearances of the 'Teller light'. This light, very short in duration, is produced by the interaction of gamma rays and neutrons with the air near the case. The time between appearances of the two lights can be measured by photographing them with a camera operating at a known speed.

This second photo (above, color) is taken from an aircraft flying at 12,500 feet some 75 nautical miles east of GZ, i.e. roughly in the direction of the inhabited atoll of Rongelap, where none of the 64 Marshallese were blinded by the flash. (Contrary to the hype popularized about the 15 megaton Bravo test blinding everything for a radius of 300 miles, in J. Schell's best-selling book *The Fate of the Earth*. In fact, Schell confused the Teak high altitude test with Bravo, and even then only rabbits flown in aircraft above the cloud cover and forced to face the fireball direction with eyes open on an unobstructed radial line to the fireball, received retinal burns.

Furthermore, those retinal burns were only a small area of the retina, and did not result in blindness. We all have a "blind spot" in the retina where the optical nerve is, and we are not blinded. So nobody has perfect vision, but we don't panic.)



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Figure 6.24b. Forest stand after a nuclear explosion, C damage (2.4 psi overpressure).

TABLE 6.24
DAMAGE CRITERIA FOR FORESTS

| Damage class | Nature of damage | Equivalent hurricane wind velocity (miles per hour) |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| A & B | Up to 90 percent of trees blown down; remainder denuded of branches and leaves (Fig. 6.24a). (Area impassable to vehicles and very difficult on foot.) | 130-140 |
| C | About 30 percent of trees blown down; remainder have some branches and leaves blown off (Fig. 6.24b). (Area passable to vehicles only after extensive clearing.) | 90-100 |
| D | Very few trees blown down; some leaves and branches blown off. (Area passable to vehicles.) | 60-80 |



Above: there were **no firestorms at the 2.4 psi peak overpressure level in a natural forest near the Bravo test**, and the **only reported fires that resulted from the Bravo test were due to an electrical short circuit on Eneman island (14 nautical miles from GZ) and in other tests, fires resulted from**

overturned gasoline electrical generators, causing fires in camp type fabric tents, rather than fires caused by thermal radiation (DNA 6035 F, *Castle Series, 1954, Fig. 57*, this photo is reproduced below), an analogy to the firestorm mechanism in Hiroshima where blast-overturned charcoal braziers in homes containing paper screens and bamboo furnishings caused the fires, rather than the popular myth of widespread firestorm/nuclear winter due to the fireball igniting wooden houses by the heat flash (wood only smokes during the thermal pulse).



Figure 57. Fire damage at Eneman Island from CASTLE, BRAVO-induced electrical short circuit.

**THE UNITED STATES
STRATEGIC BOMBING SURVEY**

THE EFFECTS OF THE ATOMIC BOMB ON HIROSHIMA, JAPAN

Volume I

Physical Damage Division
May 1947

G. CAUSE AND EXTENT OF FIRE

1. Conditions Prior to Attack

The city of Hiroshima was an excellent target for the atomic bomb from a fire standpoint: There had been no rain for three weeks; the city was highly combustible, consisting principally of Japanese domestic-type structures; it was constructed over flat terrain; and 13 square miles (including streets) of the 26.5-square-mile city was more than 5 percent built up (i. e., covered by plan areas of buildings). The remainder of the city comprised water areas, parks and areas built up below 5 percent. Sixty-eight percent of the 13-square-mile area was 27 to 42 percent built up and the 4-square-mile city center was particularly dense, 93.6 percent of it being 27 to 42 percent built up.

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a. Evidence relative to ignition of combustible structures and materials by heat directly radiated by the atomic bomb and by other ignition sources developed the following: (1) The primary fire hazard was present in combustible materials and in fire-resistive buildings with unshielded wall openings; (2) six persons who had been in reinforced-concrete buildings within 3,200 feet of air zero stated that black cotton black-out curtains were ignited by radiant heat; (3) a few persons stated that thin rice paper, cedar bark roofs, thatched roofs, and tops of wooden poles were afire immediately after the explosion; (4) dark clothing was scorched, and, in some cases, reported to have burst into flame from flash heat; (5) but a large proportion of over 1,000 persons questioned was in agreement that a great majority of the original fires was started by debris falling on kitchen charcoal fires, by industrial process fires, or by electric short circuits.

b. Hundreds of fires were reported to have started in the center of the city within ten minutes after the explosion. Of the total number of buildings investigated 107 caught fire, and, in 69 instances, the probable cause of initial ignition of the buildings or their contents was established as follows: (1) 8 by direct radiated heat from the bomb (primary fire), (2) 8 by secondary sources and (3) 53 by fire spread from exposing buildings.

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3. Conditions on Morning of Attack

a. The morning of 6 August 1945 was clear with a small amount of clouds at high altitude. Wind was from the south with a velocity of about 4½ miles per hour. Visibility was 10 to 15 miles.

(1) Only a few persons remained in the air-raid shelters after the "all-clear" sounded.

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**THE UNITED STATES
STRATEGIC BOMBING SURVEY**

THE EFFECTS OF THE ATOMIC BOMB ON HIROSHIMA, JAPAN

Volume II

Physical Damage Division

Dates of Survey:

14 October–26 November 1945

Date of Publication

May 1947



PHOTO 36 IX. Shows partly burned coat of boy who was in open near City Hall (Building 28) 3,800 feet from AZ.

4. The city, consisting principally of Japanese domestic structures, was highly combustible and densely built up. Sixty-eight percent of the 13-square-mile city area was 27 to 42 percent built up and the 4-square-mile city center was particularly dense, 94 percent of it being 27 to 42 percent built up. All the large industrial plants were located on the south and southeast edges of the city.

8. Evidence relative to ignition of combustible structures and materials by directly radiated heat from the atomic bomb and other ignition sources was obtained by interrogation and visual inspection of the entire city. Six persons who had been in reinforced-concrete buildings within 3,200 feet of air zero stated that black cotton black-out curtains were ignited by flash heat. A few persons stated that thin rice paper, cedar bark roofs, thatched roofs, and tops of wooden poles were afire immediately after the explosion. Dark clothing was scorched and, in some cases, was reported to have burst into flame from flash heat. A large proportion of over 1,000 persons questioned was, however, in agreement that a great majority of the original fires were started by debris falling on kitchen charcoal fires. Other sources of secondary fire were industrial-process fires and electric short circuits.

9. There had been practically no rain in the city for about 3 weeks. The velocity of the wind on the morning of the atomic-bomb attack was not more than 5 miles per hour.

10. Hundreds of fires were reported to have started in the center of the city within 10 minutes after the explosion.

4

(8) Scores of persons throughout all sections of the city were questioned concerning the ignition of clothing by the flash from the bomb. Replies were consistent that white silk seldom was affected, although black, and some other colored silk, charred and disintegrated. Numerous instances were reported in which designs in black or other dark colors on a white silk kimono were charred so that they fell out, but the white part was not affected. These statements were confirmed by United States medical officers who had been able to examine a number of kimonos available in a hospital. Ten school boys were located during the study who had been in school yards about 6,200 feet east and 7,000 feet west, respectively, from AZ. These boys had flash burns on the portions of their faces which had been directly exposed to rays of the bomb. The boys' stories were consistent to the effect that their clothing, apparently of cotton materials, "smoked," but did not burst into flame. Photo 36 shows a boy's coat that started to smolder from heat rays at 3,800 feet from AZ.

(3300 from GZ) 24

Hiroshima thermal flash firestorm myth debunked by the secret report: "A large proportion of over 1,000 persons questioned was, however, in agreement that a great majority of the original fires were started by debris falling on kitchen charcoal fires." (Quotation: page 4 of the USSBS report 92, volume 2.)

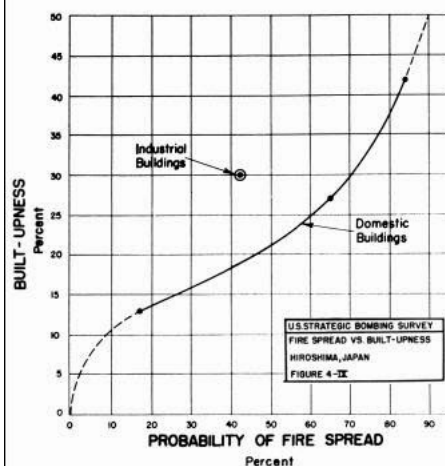
Above: Hiroshima thermal flash firestorm myth debunked by the secret report: "A large proportion of over 1,000 persons questioned was, however, in agreement that a great majority of the original fires were started by debris falling on kitchen charcoal fires." (Quotation: page 4 of the USSBS report 92, volume 2.) The following extracts from that Hiroshima report show how people in the Hiroshima branch of the Bank of Japan survived 1,300 feet from ground zero in the midst of the "firestorm" by using water buckets to keep firebrands blown in through blasted windows from starting serious fires:

D. THE CONFLAGRATION

1. Start of Fire

b. Direct Ignition by the Atomic Bomb. (1) Six persons were found who had been in reinforced-concrete buildings within 3,200 feet of AZ at the time of the explosion and who stated that black cotton black-out curtains were blazing a few seconds later. In two cases it was stated that thin rice paper on desks close to open windows facing AZ also burst into flame immediately, although heavier paper did not ignite. No incidents were recounted to the effect that furniture or similar objects within buildings were ignited directly by radiated heat from the bomb.

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(4) It was reported that a cotton black-out curtain at an unprotected window in the east stair tower of Building 85 (3,800 feet from AZ) smoked and was scorched by radiated heat from the bomb but it did not burst into flames.

(5) A man who was in the third story of building 26 (3,000 feet from AZ) stated that radiated heat from the bomb ignited cotton black-out curtains at unprotected windows in the west wall and thin rice paper on desks.

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(10) Fire fighting with water buckets was reported inside only four buildings (24, 33, 59, and 122) and probably prevented extensive fire damage in them. In Building 24, fire was started in contents of a room at the southwest corner of the second story by sparks from trees on the south side about 1½ hours after the attack. Men inside the building extinguished the fire and probably prevented further damage in the first and second stories (Photo 85). A little later, contents in the third story were ignited by sparks from the outside and were totally damaged. This fire was beyond control before it was discovered, but did not spread downward through open stairs. At Building 33, sparks from the west exposure, which burned in early evening, set fire to black-out curtains in the west wall and to waste paper in the fourth story of the northwest section of the building. Twenty persons were on guard in the building awaiting such an occurrence and the fires were quickly extinguished while in the incipient stage. At Building 59 sparks from the south exposure ignited a few pieces of furniture in the first and third stories and black-out curtains in the first story about 2 hours after the attack. These fires were extinguished by men inside and negligible damage resulted. A few window frames in the east and west walls and 2 or 3 desks in the first story of Building 122 were ignited by radiated heat and sparks from the west and northeast exposures. These fires were extinguished quickly and damage was negligible.

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A. SUMMARY

4. The mean areas of effectiveness (MAE) of the atomic bomb for structural damage about ground zero (GZ) and the radii of the MAE's for the several classes of buildings present were computed to be as follows:

| | MAE's in square miles | Radius of MAE's in feet |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------|
| Multistory, earthquake-resistant..... | 0.03 | 500 |
| Multistory, steel- and reinforced-concrete frame (including both earthquake- and non-earthquake-resistant construction)..... | .05 | 700 |
| 1-story, light, steel-frame..... | 3.4 | 5,500 |
| Multistory, load-bearing, brick-wall..... | 3.6 | 5,700 |
| 1-story, load-bearing, brick-wall..... | 6.0 | 7,300 |
| Wood-frame industrial-commercial (dimension-timber construction)..... | 8.5 | 8,700 |
| Wood-frame domestic buildings (wood-pole construction)..... | 9.5 | 9,200 |
| Residential construction..... | 6.0 | 7,300 |

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Building No.: 24. Coordinates: 5H. Distance from (GZ): 1,300, (AZ): 2,400.
NAME: Bank of Japan, Hiroshima branch.
CONSTRUCTION AND DESIGN
Type: Reinforced-concrete frame (steel core).
Walls: Reinforced concrete (12-inch) and stone (6-inch).
Floors: Reinforced concrete.
Framing: Reinforced concrete.

REMARKS: Fire only in room at southwest corner of second story and in entire third story. No fire in building right after bomb, but afire at 1000 hours. Fire in room in second story extinguished with water buckets.

GROUND ZERO



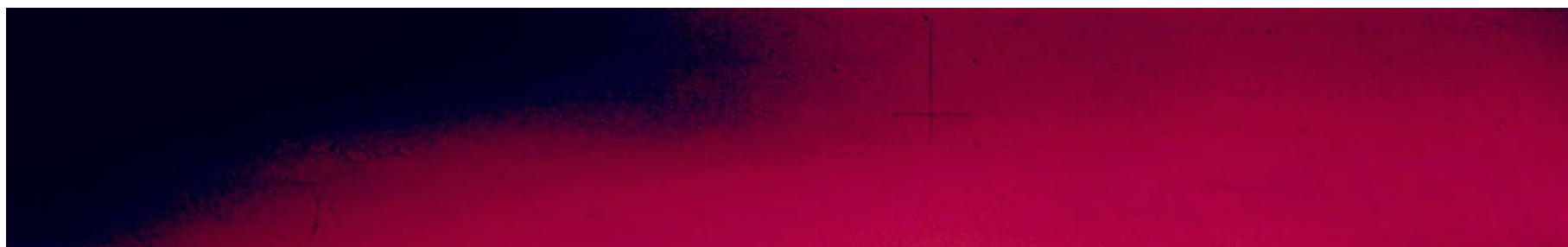
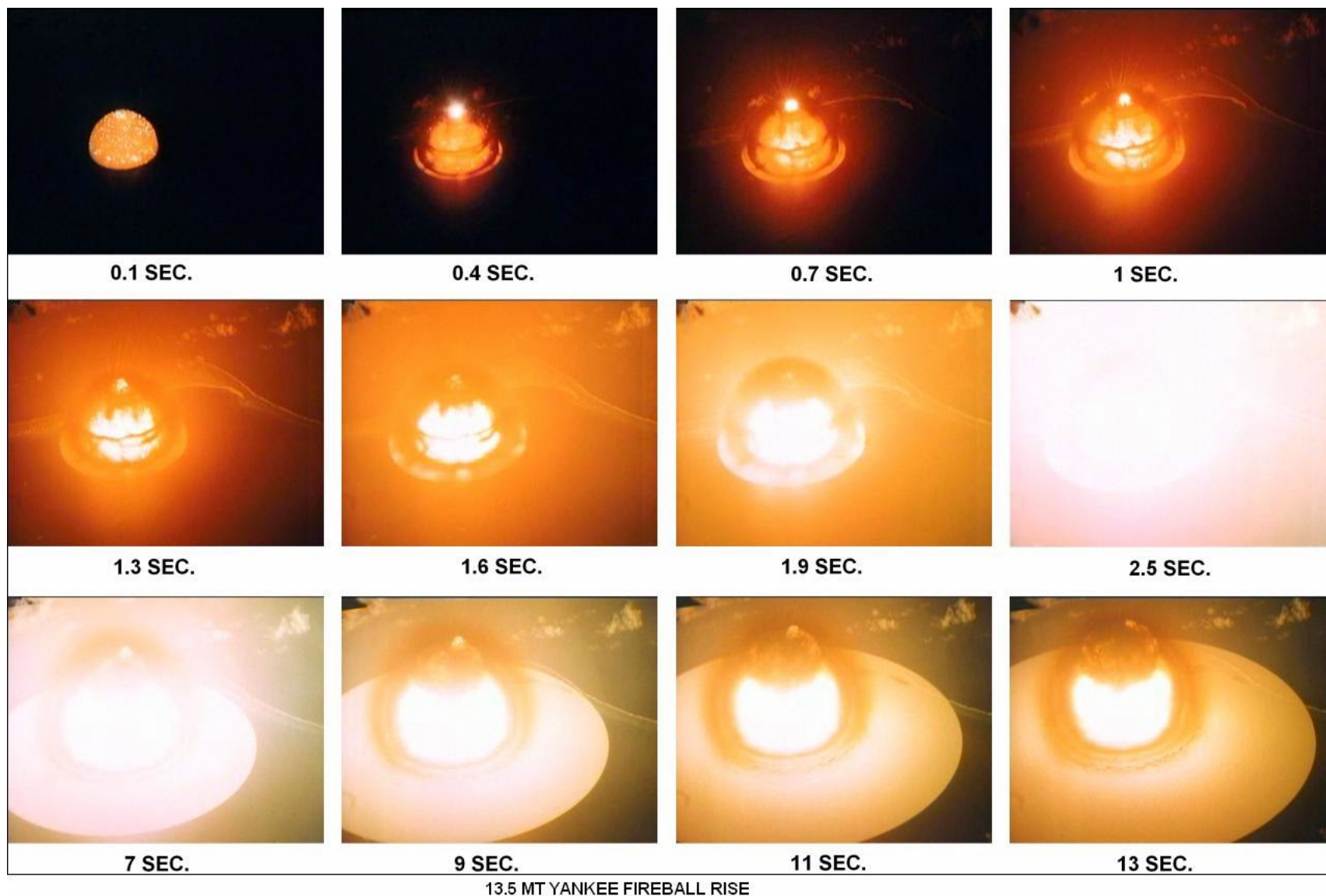
U.S. Strategic Bombing Survey report 92



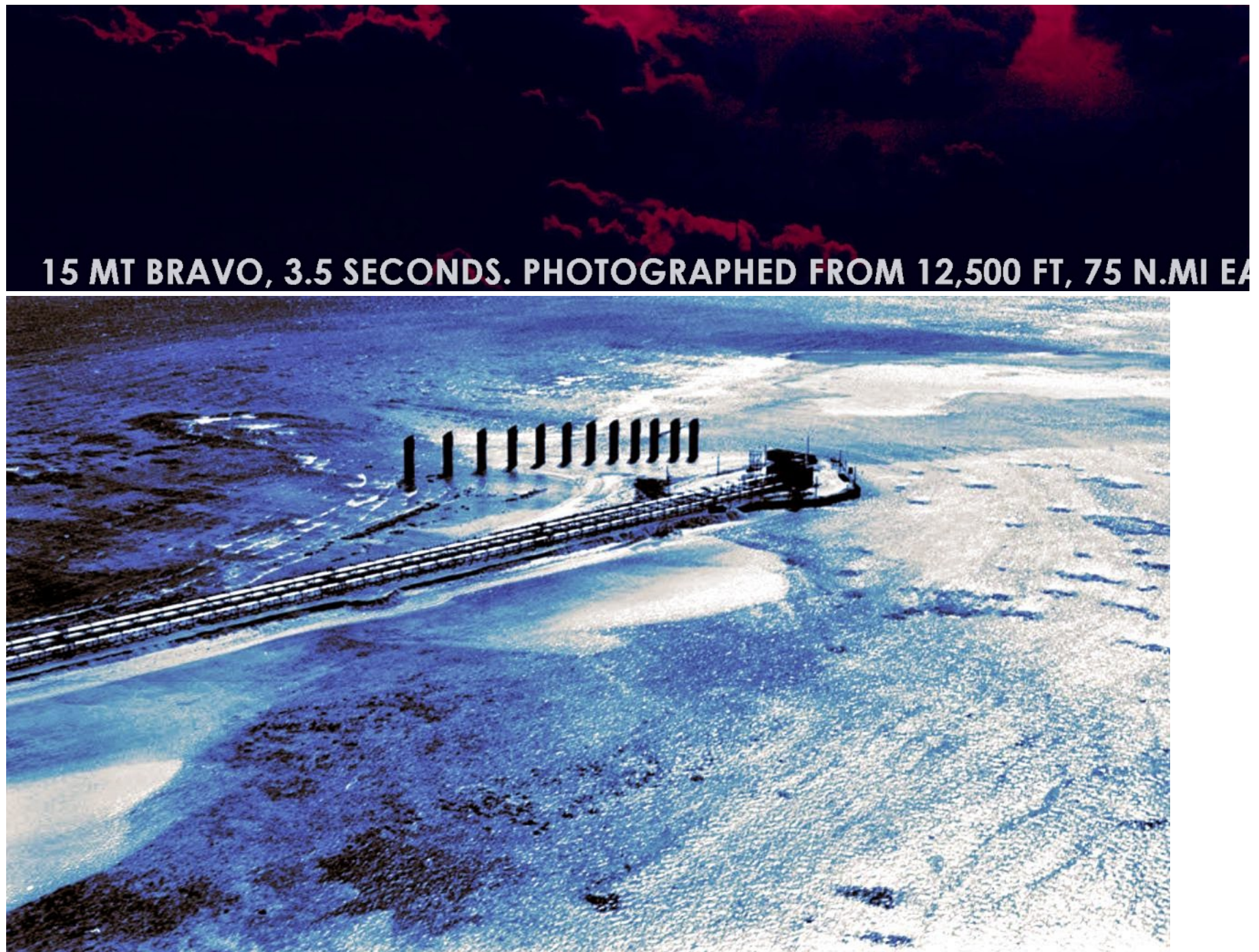
In the low 19% humidity air of the 1953 Encore test in the Nevada desert, a house room full of combustibles with a windows facing an unobstructed radial line of sight to the bomb was immediately ignited. Most cities have been built near large bodies of water like rivers, coast, or lakes, which allows evaporation and keeps the humidity far higher (50-80% typically), than the Encore test at the Nevada desert. The large heat of vaporization of water, which must be supplied to heat up materials containing water to temperatures well beyond 100 C to allow ignition, curtains ignition. The brief duration of the thermal flash only allows thin damp kindling to be dried

out and ignited, therefore the equilibrium moisture content at high humidity has a disproportionately greater fire-retarding effect for thick damp wood than it does for fine kindling like damp leaves. This factor was ignored in the 1957 *Capabilities of Atomic Weapons*, and the 1972 *Capabilities of Nuclear Weapons*, both of which treated the effects of humidity for all materials using data from damp leaves, which minimised and misrepresented the effect of humidity in retarding ignition of thick, damp wood. Thus, the Encore nuclear test data was falsely associated with modern cities, despite the higher average humidity and the greater shadowing effect by intervening buildings and trees, which occurs in most urban areas.

It is simply not necessary to continue to exaggerate nuclear weapons effects, and it is dangerous because it ignores the useful lessons of Hiroshima for civil defense protection against nuclear terrorism in the real world, where secrecy is debunked by people like the spy Dr Klaus Fuchs, and merely serves to undermine public knowledge, not to prevent enemies from building bombs!

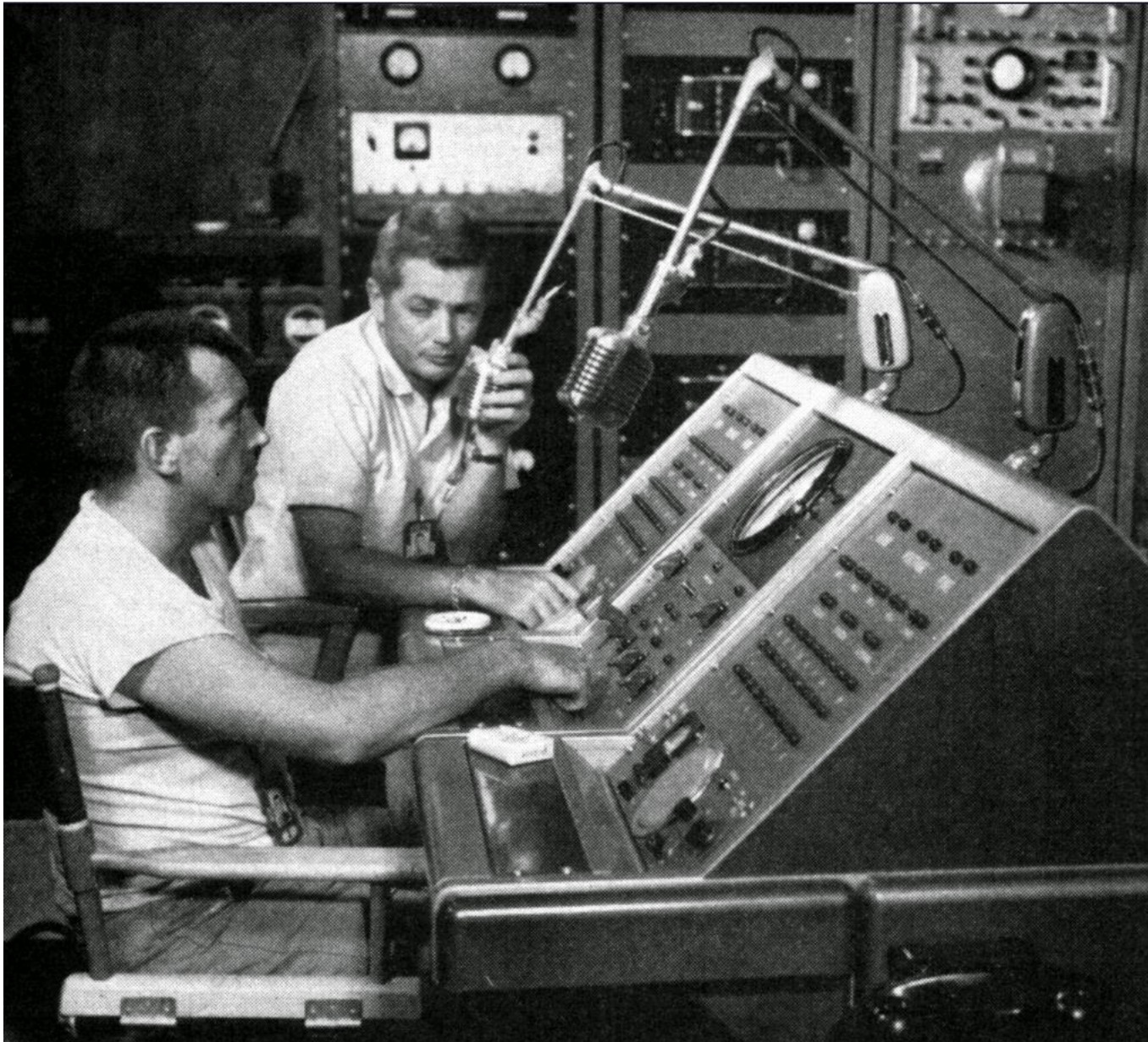


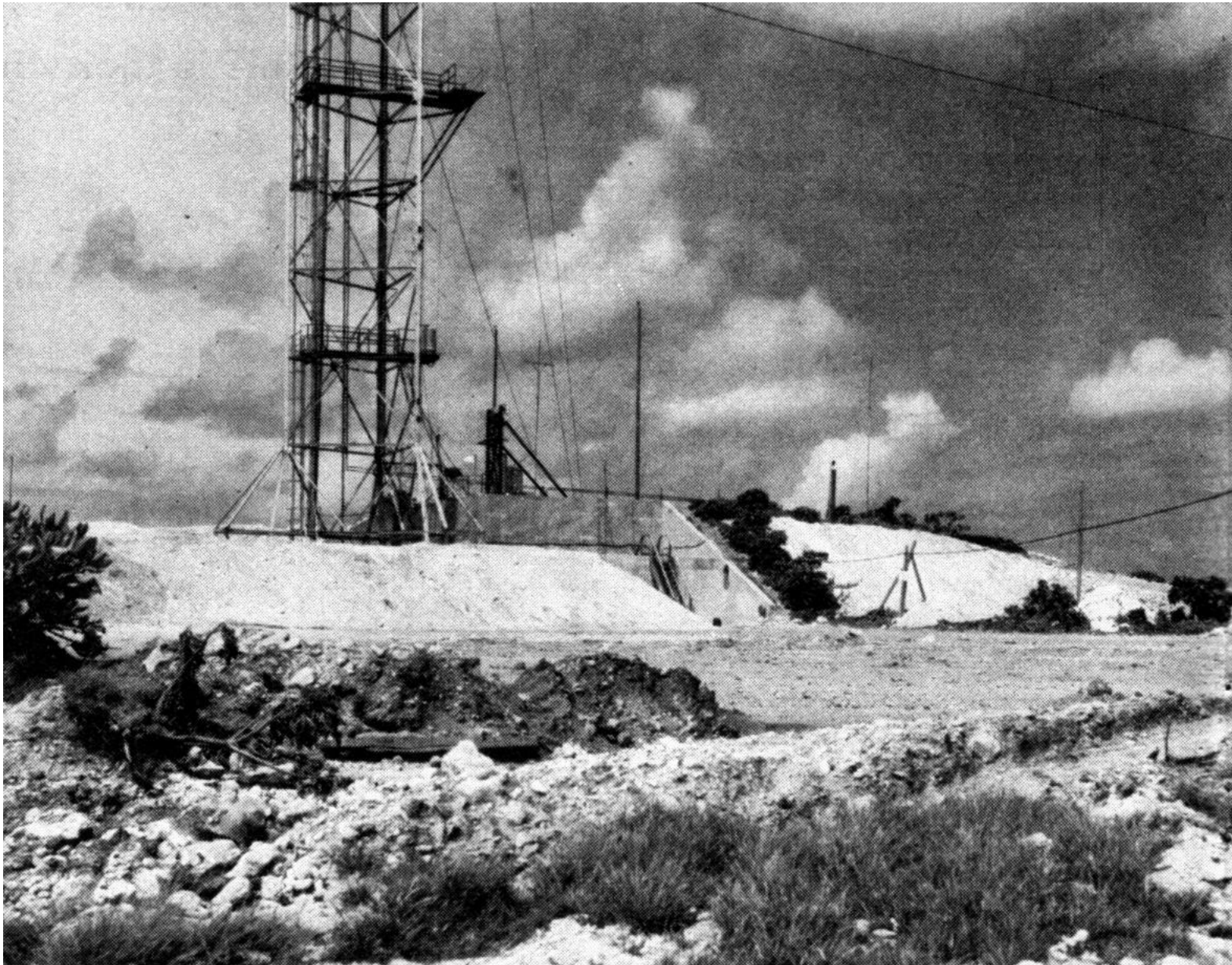




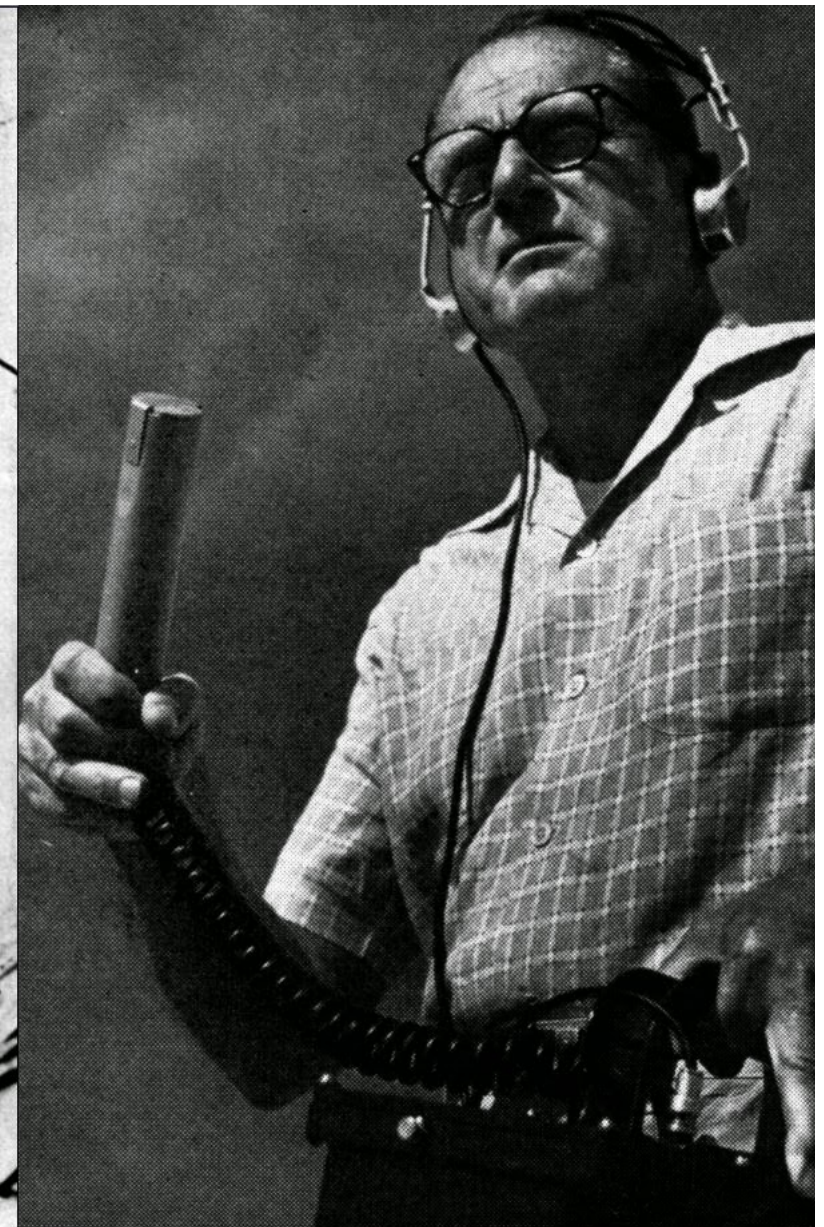


Bernard J. O'Keefe of E.G.G. seated at the control panel of the Bravo test:





15 MT BRAVO WAS FIRED USING A HUMAN CREW IN THIS SIMPLE BLOCKHOUSE ON ENYU ISLAND, BIKINI ATOLL



THE ENYU ISLAND BLOCKHOUSE WAS HIT BY FALLOUT, TRAPPING THE FIRING PARTY, BUT ALL WERE SAFELY EVACUATED.

The story of the evacuation of the Bravo firing party from Bikini Atoll following the 15 megatons (unexpected) yield is told both by (1) the firing party commander John C. Clark (above right, holding a Radiac set of type AN-PDR-27, which is a simply a Geiger counter with plug in headphones) in his article "We were trapped by radioactive fallout", published finally in the 20 July 1957 *Saturday Evening Post* (pages 17-18 and 64-66), and (2) by his deputy, Bernard J. O'Keefe, in his book *Nuclear Hostages*. Clark's 1957 article states that the ground shock was more impressive than the fallout, which was easily shielded by retreating to the centre of the building, away from the doorway:

"Less than twenty seconds after zero, the entire building started slowly rocking ... I grabbed the side of the control panel for support. Some of the men just sat down on the floor. I had been in earthquakes before, but never anything like this. It lasted only a few seconds, but just as we were breathing easier, another ground shock hit us ... Grier came back to relieve me at the radio and I went outside, taking along a Geiger counter. The shot cloud had spread out and was pure white. ... [About 16 minutes after detonation] we were receiving radiation at the rate of 8/1000 of a roentgen per hour [8 mR/hr] ... While we watched, the counter went up to 20 mR [hr], then to 40. ... By the time we were back in the blockhouse, the reading near the door was 1 R [hr], and in the control room it was about 20 mR [hr]. ... about H plus 1 hour ... I was most concerned as to what was happening to the radiation level outside. ... It read 40 R [hr]. I quickly closed the door. ... A little over an hour after shot time ... our generator began failing and the lights gradually went out, leaving us in darkness ... We worked out a plan for a rescue operation to take place about 5:30 pm. ... To keep the "hot" dust off our bodies, we wrapped ourselves completely in bed sheets, cutting holes only for our eyes. Three helicopters were sent from the command ship. As we heard them overhead we left the blockhouse, got into our jeeps and drove the half mile to the landing mat. ... The whole operation took less than 5 minutes. ... None of use had received any harmful amount of radiation. ... However disconcerting it may have been to us at the moment, our experience proved to be a windfall for the Civil Defense people. ... Now, for the first time, humans had been in an area of lethal radiation and had been unharmed because of adequate protective covering ... shelter in an old-fashioned cyclone shelter with a covering of earth three feet thick would reduce the radiation level to about 1/5000 of that outside. ... Bulldozers were brought in to scrape off the top soil containing most of the radiation and push it into the ocean. This reduced the radiation level around the blockhouse enough so that we could use it again for part of the test work."

Bernard J. O'Keefe, deputy to Clark, later wrote his own account in his book *Nuclear Hostages* (Houghton Mifflin, 1983), which may be less accurate because it was written later from memory (O'Keefe states that he did not refer to classified documents while writing the book in 1983) but adds some details, pages 163-198:

"Important thought it was, the experiment was routine for us. It was predicted that the yield would be smaller than that of the Mike device ... The group in the firing party included five others in addition to Clark, Grier and me. Dr Harold Stewart, a Naval Research Laboratory expert in spectroscopic [fireball thermal radiation spectrum] measurements would be doing some experiments from the control bunker ... Would there be a shift in the wind? If so, how bad would it be and what damage would it do? ... The man to make the decision was Al Graves, the scientific director. ... Grier reached for the bench to steady himself as I stood bewildered in the center of the room. The whole building was moving, definitely now, not shaking or shuddering as it would from the shock wave that had not arrived yet, but with a slow, perceptible rolling motion like a ship's roll ... Generally, the ground shock was never felt, as it died off more rapidly than did the shock wave through the air; the fact that this one was evident at all was an indication that the explosion had been one of tremendous force. ... We waited 15 minutes. ... Suddenly the sky became filled with a whitish chaff. I stuck out my hand, which was soon covered ... The particles were bigger now; it began to feel like a hailstorm as larger and larger particles fell from the sky. At first they were finely divided like dust, but quickly small pebbles, then rocks began raining from the sky. ... We were preparing a fresh pot of coffee on the hot plate when the lights started to flicker and the coffee stopped boiling. ... The generators and main power plant were in a separate building ... One of the phases inside the generator had failed. ... Major John Servis, the commander of the Rad-Safe detachment ... was dressed in conventional radiation protective clothing - loose overalls taped tight at the ankle, snap-on booties over his shoes, a cloth cap, and cotton disposable gloves. ... Our film badges showed that we had accumulated only a few hundred milliroentgens ... The area outside our bunker received 800 R."

Update 6 April 2015:

Alex Wellerstein, an historian and the creator of a misleading "nukemap" urban area nuclear effects radius calculator based on **Carey Sublette's copyright equations here, which as shown in this blog** are unsupported by the evidence from Hiroshima and Nagasaki, and nuclear tests has been a little critical of this blogger so maybe a few words are needed on this post about the nature of objective research. If they make statements that seem to be analogous to the kind of uncritical unethical diatribe politics published by *Scientific America*, *Bulletin of the Atomic Scientists*, and the 1930s *Cambridge Scientists Antiwar Group*, i.e. arguments substantiated only by consensus of ignorant opinion and claims that there are no alternative sources of information, then I think that's unhelpful. These false claims may then be aided by censorship and ad hominem attacks on those alternative sources who are "rude" enough to dismiss as "drivel" or "fascist", the groupthink "thuggery" masquerading as "popular science". President Truman's statement on the dropping of the bomb on Hiroshima, 6 August 1945, for the first time alloyed taxpayer funded groupthink science with political propaganda. Ever since then, we've had people calling for a Manhattan Project style "big science" project.

Don't get me wrong. Dictatorship or "leadership" if you prefer (I believe that all sorts of power inevitably invoke corruption, so I'm personally suspicious of any political system based on dogma) of the Oppenheimer sort can sometimes work, particularly when the leader is hard working and is not given to paranoia. King Solomon is a good example of a forceful leader who was widely respected for working hard to achieve justice. On the other hand, groupthink often fails as Irving Janis documented, where it becomes corrupted, paranoid, and lazy, for example in using "shoot the messenger" tactics (as Stalin and Hitler did, together with many

current politicians and media celebrities). In other words, if you politely publish the evidence they are wrong, you're ignored. If you assert the facts and point out that the definition of "lying" and "liars" are those who persist in making an error of statement even after they have been disproved, then you're dismissed as being "rude", with no serious interest being taken in the actual scientific evidence.

It's impossible to engage in any sort of discussion with people who just want to claim that thermal radiation effects measured in open deserts apply to built up cities, where the buildings intervening between fireball and target have a shielding effect that Glasstone and Carey Sublette ignore. Suppose that a terrorist detonates a nuclear weapon in a city tomorrow and few people duck and cover or shelter from the fallout because they've been put off civil defense by exaggerated data (of the "survivors envy the dead" sort) that are essentially synonymous with nuclear propaganda (either Glasstone and Dolan's approach to pro-deterrence via "maximising fear" of nuclear effects by presenting desert test thermal effects without corrections for urban areas, or alternatively pro-disarmament via "maximising fear" as is the way of the *Scientific American*, *Bulletin of the Atomic Scientists*, and the 1930s *Cambridge Scientists Antiwar Group*). In this situation, unnecessary suffering may occur due to panic taking the place of protective countermeasures. Nobody in the popular media or popular politics, or even popular science will blame the culprits (we know that from what happened to the 1930s *Cambridge Scientists Antiwar Group*, when Churchill made many of them advisers during WWII!).

However, the fact remains that if there is a nuclear threat which is important, then surely it's important to face the true facts squarely? If there's not "real" threat, then again, what's the harm of knowing the truth? I'd actually argue that Alex's argument that anyone who disagrees with orthodoxy folk is rude or boring is really inverted. Put it like this, in England there was once a "fair play" tradition of "playing devil's advocate" in discussions to permit alternative views to be viewed and of "supporting the underdog", which is probably why we have a unit for energy named after a brewer, Joule, and a unit for capacitance named after a bookbinder's apprentice who was proud to claim that 99.9 of his experiments ended in failure. I personally choose to think it's interesting, not boring, to seek out and criticise errors, and if people ignore you and go on and on repeating the debunked errors, to remind them that the dictionary does contain some rude words whose definition just happens to fit their tactics in shooting the messenger:

An ad hominem (Latin for "to the man" or "to the person"^[1]), short for **argumentum ad hominem**, means responding to arguments by attacking a person's character, rather than to the content of their arguments. When used inappropriately, it is a **fallacy** in which a claim or argument is dismissed on the basis of some irrelevant fact or supposition about the author or the person being criticized.^[2] *Ad hominem* reasoning is not always fallacious, for example, when it relates to the credibility of statements of fact or when used in certain kinds of moral and **practical reasoning**.^[3]

Propaganda is a much abused word, since like "groupthink" it can result in either the circulation of unfashionable or taboo facts, or errors. If you discover something that conflicts with an unproved but widely circulated assumption of orthodoxy, for example, your attempt to set the facts straight may be dismissed as "propaganda". However, the mainstream textbooks which circulate the fallacy are really bad "propaganda", so dismissing all marketing for a new fact as being "propaganda" is just an empty slogan. Nor do you need to spend equal time on discussing the merits of two rival alternatives.

There's a wonderful example with Thomas Young's double slit experiment in physics, which justified the wave nature of light by diffraction experiments. Lord Brougham, who just happened to be the *author of a major textbook on Newton's particle theory of light, apparently went ballistic when he read Young's well reasoned wave theory of light*, launching a savage and paranoid attack on Young's character, personality, writing style, devious intentions in the widely read *Edinburgh Review*, and managed to convince the readers and editor that Young's work was such rubbish that they wouldn't print any response from Young (the same tactic was used in April 1961 by the *Scientific American* amateur mathematician and lawyer James Newman in censoring Herman Kahn by contrived ridicule of *On Thermonuclear War* and its author). Or perhaps, Lord Brougham only used such spurious pseudoscientific attacks because he knew in advance that he was in a relatively powerful position as a Lord, and could use his status to censor out what would be an embarrassing rebuttal from Young. Young was forced to publish his response as a private pamphlet, which only sold one copy and by his own admission was a public relations failure. **But in fact there were some faults in Young's style of argument and even the substance of his claims:**

"Commentators have traditionally asked aloud why the two-slit experiment did not immediately lead to an acceptance of the wave theory of light. And the traditional answers were that: (i) few of Young's contemporaries were willing to question Newton's authority, (ii) Young's reputation was severely damaged by the attacks of Lord Brougham in the *Edinburgh Review*, and that (iii) Young's style of presentation, spoken and written, was obscure. Recent historians, however, have looked instead for an explanation in the actual theory and in its corpuscular rivals (Kipnis 1991; Worrall 1976). Young

had no explanation at the time for the phenomena of polarization: why should the particles of his ether be more willing to vibrate in one plane than another? And the corpuscular theorists had been dealing with diffraction fringes since Grimaldi described them in the 17th century: elaborate explanations were available in terms of the attraction and repulsion of corpuscles as they passed by material bodies. So Young's wave theory was thus very much a transitional theory. It is his 'general law of interference' that has stood the test of time, and it is the power of this concept that we celebrate on the bicentennial of its publication in his Syllabus of 1802."

- J. D. Mollon, "The Origins of the Concept of Interference", *Phil. Transactions of the Royal Society of London*, vol. A360 (2002), pp. 807-819.

So there's another fallacy, the fallacy that all successful science is an immediately successful "born giant". New ideas, like babies, are generally born in a nascent form, which needs years of discussion and development and objective (if not constructive) criticism, so by preventing these essentials the thing can be stunted at birth.

Objective criticism will debunk weak assumptions or poor presentations. Constructive criticisms will enable the development of stronger arguments and better experiments or calculations. Both are vital. But subjective criticism, attacking the person or the excitement level of the subject, instead of the idea, is just an excuse to ignore the substance of the argument, and this leads to time-wasting. People like Boltzmann worried unduly about peer-review politics and the acceptance of ideas, unlike Einstein and Feynman who just called bigots "idiots" and moved on. It's important not to try to both be a card-carrying member of the orthodoxy, as well as being a radical. You can't expect to me welcomed if you're a heretic!

If populist science media and forums are biased against really unbiased investigation of "alternatives" to mainstream orthodoxy (usually this occurs because of arrogance, conceit, corruption, a lack of genuine interest in objectivity, sometimes it is due to fears over funding and personal status of anyone taking seriously ideas which are generally considered to be taboo), then new data are given the Lord Brougham/James Newman treatment. We don't have a "free" mainstream media because publication costs money and must cater to some form of sensationalist populism in order to show a profit or even survive, and populism unfortunately caters to a sewer of fictitious populist myths which pass for knowledge. It's more sensational as well as quick and easy to the media to tell people that any nuclear explosion vaporizes everything within a twenty mile radius instantly regardless of buildings, than to tell the truth. At least Carey Sublette and Alex Wellerstein's mistakes and opprobrium at criticisms can act as a motivation for continuing criticism. **The Edward Witten approach is to ignore all critics altogether to starve them of oxygen, and then celebrate a victory for a new kind of science, non-falsifiability.**

A still worst situation is where a new religion evolves to assert that there is no sanity in anyone who merely questions a dogma. This occurred when N. Bohr asserted that anybody who questioned the single wavefunction collapse entanglement "interpretation of quantum mechanics" was the son of satan, including Feynman at the 1947 Pocono conference. Dirac's solution to Schroedinger's equation asserts that an electron has a *single* wavefunction amplitude which must "collapse" to a discrete eigenvalue corresponding to a quantized energy level when the electron is actually measured, but Feynman came up with a mechanism whereby there's no collapse of a single wavefunction but rather a superposition of many wavefunction phases which allows interference to cancel out paths of large action (lagrangian energy integrated over time). So, contrary to Bohr, there isn't a *single* wavefunction *per electron*, but rather one wavefunction for every *potential interaction history* (or Feynman diagram). Because all potential interactions are actually occurring, Feynman points out in his 1985 book *QED* that the electron's path is indeterminate simply because the small size of the ground state orbit is close enough to the electron's wavelength to enable the paths to interfere with one another. That's real heresy, and was dismissed in 1947 by Teller, Oppenheimer, Pauli, Einstein, *et al.*:

'I would like to put the uncertainty principle in its historical place ... If you get rid of all the old-fashioned ideas and instead use the ideas that I'm explaining in these lectures – adding *arrows* for all the ways an event can happen – there is no *need* for an uncertainty principle!'

'... with electrons: when seen on a large scale, they travel like particles, on definite paths. But on a small scale, such as inside an atom, the space is so small that ... interference becomes very important, and we have to sum the arrows[*] to predict where an electron is likely to be.'

– Richard P. Feynman, *QED*, Penguin Books, London, 1990, Chapter 3, pp. 84-5, pp. 84-5. [*Arrows = wavefunction amplitudes, each proportional to $\exp(iS) = \cos S + i \sin S$, where S is the action of the potential path.]

It's a good example of a *continuing* heresy over a basic dogma, and Nobel Laureate Feynman isn't alone either, since **Nobel Laureate Gell-Mann debunked single-wavefunction entanglement using colored socks**. Professor Clifford Johnson who authored a string theory book on D branes kindly responded that he simply hadn't thought about the gauge boson exchange process as being a mechanism for indeterminacy in quantum mechanics, while Professor Jacques Distler kindly responded that he had seen/read Feynman's twenty-years earlier book co-authored with Albert Hibbs, *Path Integrals and Quantum Mechanics*, and assumed that's what I was writing about. So there's no real discussion or interest in the path integral's interference mechanism as an alternative to the usual dogmatic or simplistic waffle from N. Bohr, even though these people are widely admired and considered great objective scientists (or perhaps because of it, i.e. egotism, impatience, intolerance to deviancy of worship to mainstream dogma, etc.):

"... Bohr ... said: '... one could not talk about the trajectory of an electron in the atom, because it was something not observable.' ... Bohr thought that I didn't know the uncertainty principle ... it didn't make me angry, it just made me realize that ... [they] ... didn't know what I was talking about, and it was hopeless to try to explain it further. I gave up, I simply gave up [trying to explain it further]."

– Richard P. Feynman, as quoted in Jagdish Mehra's biography of Feynman, *The Beat of a Different Drum*, Oxford University Press, 1994, pp. 245-248.


That's a continuing heresy because it is neither debunked (the path integral is, after all, fundamental to the Standard Model with its thousands of confirmed predictions), nor used to replace non-relativistic 1st quantization single-wavefunction collapse dogma. The situation is akin to the fact that the small *natural* risk of leukemia (the cancer which shows the strongest function of radiation exposure for all types of cancer) exceeded the excess risk from radiation induced leukemia in Hiroshima for people who received less than about 600 mGy (or 60 Rads; whichever units you need). People who got leukemia in Hiroshima were more likely than not to have natural leukemia if their radiation dose was below about 600 mGy.

About 600 mGy doubled the natural risk of leukemia. For all other forms of cancer, even higher doses were needed to double the natural risk.

The popular media for the most part prefers to say that radiation causes all the cancer or even all the deaths in Hiroshima, essentially because that myth is "politically correct" *if you want to abolish weapons that use radiation*. So they want to ban a deterrent weapon involving radiation, *because of their false statement of the effects of radiation*. That is completely pathetic; it's not so much a "circular argument" as *complete insanity*, although I guess the word "insanity" will be deemed "rude" by the powers that be. One funny thing: I was once attacked by an historian of WWII who dismissed the facts about civil defense on the basis of my interest in objective science, QFT. His very obscure and vague argument appeared to be that anyone interested in objectivity in science, rather than groupthink dictatorship, should be bombed.

In some ways, it's best to get to the heart of a bigot's "reasoning" as soon as possible, so you know where you stand and can avoid wasting time in futile arguments. For instance, if someone believes in miracles because it gives them comfort when they're suffering from terminal cancer, it's not necessarily a good idea to enter an argument over the lack of objective evidence for miracles. Little good and plenty of harm may result. *If the placebo effect reduces anxiety, it's doing a job of some sorts (although not by the claimed mechanism) and in some cases may therefore have some utility*. Likewise, if someone hates civil defense because they see it as a "dangerous alternative" to disarmament, it's a waste of time trying to make an objective argument about the shielding potential of dirt to absorb/deflect blast and radiation. You usually end up in a situation where the critic of "civil defense" is found to be using "civil defense" as a proxy for another object of hate, usually something that has little to do with it such as capitalism, imperialism or war mongering. They see that civil defense has few defenders and is therefore a "soft target", so they bomb it!

It's often impossible to use objectivity to sway bigoted people because they have too much to lose socially if they tell the truth (e.g., losing the ability to publish in the *Bulletin of the Atomic Scientists* etc.), but while they provide a cloak to mysticism or even outright deceptions, someone needs to hold them to account somewhere on the internet, even if the populist media is too busy kissing celebrities to notice it.

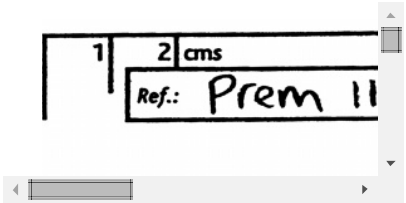
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CONVENTIONAL WARS HAVE KILLED TENS OF MILLIONS OF PEOPLE, NUCLEAR WEAPONS CAN RAPIDLY DETER THIS REAL THREAT TO PEACE WITH MINIMAL CASUALTIES. 'During the critical period 8-15 February [1968], the U.S. command realized [that conventional] bombing was not sufficiently effective. ... The air campaign dropped over 110,000 tons of bombs and napalm on the area around Khe Sanh during the 77-day siege ... the most heavily bombed target in the history of conventional warfare.' – W. C. Yengst, S. J. Lukasik, and M. A. Jensen, *Nuclear Weapons that went to War*, SAID report DSWA-TR-97-25, September 1998 (quoted in the 2015 book by the secret *Capabilities of Nuclear Weapons* editor, Dr Harold L. Brode, *Nuclear Weapons in the Cold War*, page 287). [British Nuclear Test Civil Defence Research](#)



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CHANGE 1

Field Manual No 101-31-1

NUCLEAR WEAPONS EMPLOYMENT DOCTRINE AND PROCEDURES

Radius of vulnerability (emergency risk criterion: 5% combat ineffective)

Figure 54. Radii of Vulnerability.

| CATEGORY | PERSONNEL (LL) IN— (Based on Governing Effect) | | | | |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------|------|-------|---------------|
| | Open | Open Foxholes | APCs | Tanks | Earth Shelter |
| Radii listed are distances at which a 5 percent incidence of effect occurs. HOB used is $60W^{1/3}$ meters. | | | | | |
| Yield (KT) | | | | | |
| (Distances are in meters) | | | | | |
| 0.1 | 700 | 600 | 600 | 500 | 300 |
| 1 | 1200 | 900 | 900 | 800 | 500 |
| 10 | 3200 | 1300 | 1300 | 1250 | 900 |
| 20 | 4000 | 1500 | 1450 | 1400 | 1000 |
| 100 | 8000 | 1900 | 1800 | 1800 | 1400 |
| 200 | 12000 | 2000 | 1900 | 1900 | 1500 |
| 300 | 14000 | 2100 | 1950 | 1950 | 1600 |

**Protective factor = ratio of
area of effect in the open,
area of effect for shelter**

**Example: for 300 kt, the protective
factor of open foxholes is equal to
 $(14,000)^2 / (2,100)^2 = 44$.**

| Open | Open Foxholes | APCs | Tanks | Earth Shelter |
|------|---------------|------|-------|---------------|
| 1 | 1.36 | 1.36 | 1.96 | 5.44 |
| 1 | 1.78 | 1.78 | 2.25 | 5.76 |
| 1 | 6.06 | 6.06 | 6.55 | 12.6 |
| 1 | 7.11 | 7.61 | 8.16 | 16.0 |
| 1 | 17.7 | 19.8 | 19.8 | 32.7 |
| 1 | 36.0 | 39.9 | 39.9 | 64.0 |
| 1 | 44.4 | 51.5 | 51.5 | 76.6 |

Calculation of the injury-averting protective factors by simple open foxholes and earth shelter function of weapon yield. Most countermeasures are relatively ineffective against tactical nuclear weapons (due to the predominating neutron radiation effect at 0.1 kt yield), but are extremely effective against strategic nuclear weapons with yields of 100, 200 and 300 kt (protective factors of 44 to 76.6).

The definition of protective factor used here is the factor by which casualties numbers are reduced.

Richard P. Feynman, 'This Unscientific Age', in *The Meaning of It All*, Penguin Books, London, 1998, pages 106-9:

'Now, I say if a man is absolutely honest and wants to protect the populace from the effects of radioactivity, which is what our scientific friends often say they are trying to do, then he should work on the biggest number, not on the smallest number, and he should try to point out that the [natural cosmic] radioactivity which is absorbed by living in the city of Denver is so much more serious [than the smaller doses from nuclear explosions] ... that all the people of Denver ought to move to lower altitudes.'

"If a man reads or hears a criticism of anything in which he has an interest, watch ... if he shows concern with any question except 'is it true?' he thereby reveals that his own attitude is unscientific. Likewise if ... he judges an idea not on its merits but with reference to the author of it; if he criticizes it as 'heresy'; if he argues that authority must be right because it is authority ... The path of truth is paved with critical doubt, and lighted by the spirit of objective enquiry... the majority of people have resented what seems in retrospect to have been purely matter of fact ... nothing has aided the persistence of falsehood, and the evils resulting from it, more than the unwillingness of good people to admit the truth ... the tendency continues to be shocked by natural comment, and to hold certain things

too 'sacred' to think about. ... How rarely does one meet anyone whose first reaction to anything is to ask: 'is it true?' Yet, unless that is a man's natural reaction, it shows that truth is not uppermost in his mind, and unless it is, true progress is unlikely."

- Sir Basil Henry Liddell Hart, *Why Don't We Learn from History?*, PEN Books, 1944; revised edition, Allen and Unwin, 1972.

Civil defense countermeasures, to be taken seriously by the population, require the publication of solid facts with the scientific evidence to support those facts against political propaganda to the contrary. Secrecy over the effects of nuclear weapons tests does not hinder plutonium and missile production by rogue states, but it does hinder civil defense countermeasures, by permitting lying political propaganda to go unopposed (see linked post, here).

Terrorists successfully prey on the vulnerable. The political spreading of lies concerning threats and the alleged 'impossibility' of all countermeasures, terrorizing the population in order to 'justify' supposedly pro-peace disarmament policies in the 1920s-1930s, resulted in the secret rearmament of fascist states which were terrorizing the Jews and others, eventually leading to World War II.

Political exaggerations about nuclear weapons effects today:

(1) encourage terrorist states and other groups to secretly invest in such weapons to use either for political intimidation or for future use against countries which have no countermeasures, and

(2) falsely dismiss, in the eyes of the media and the public, cheap relatively effective countermeasures like civil defense and ABM.

Therefore, doom-mongering media lies *make us vulnerable to the proliferation threat* today in two ways, just as they led to both world wars:

(1) Exaggerations of offensive technology and a down-playing of simple countermeasures such as trenches, encouraged belligerent states to start World War I in the false belief that modern technology implied overwhelming firepower which would terminate the war quickly on the basis of offensive preparedness: if the facts about simple trench countermeasures against shelling and machine guns during the American Civil War had been properly understood, it would have been recognised by Germany that a long war based on munitions production and logistics would be necessary, and war would have been seen to be likely to lead to German defeat against countries with larger overseas allies and colonies that could supply munitions and the other resources required to win a long war.

(2) Exaggerations of aerial bombardment technology after World War I led to disarmament 'supported by' false claims that it was impossible to have any defense against a perceived threat of instant annihilation from thousands of aircraft carrying gas and incendiary bombs, encouraging fascists to secretly rearm in order to successfully take advantage of the fear and vulnerability caused by this lying political disarmament propaganda.

Contrived dismissal of civil defense by Marxist "Cambridge Scientists Anti-War Group" bigots: (a) appeased war-mongering enemies, and (b) maximised war mortality rates. Idealism kills. Super effective, fully proof-tested, cheap civil defense makes nuclear deterrence credible to stop conventional war devastation by avoiding collateral damage, tit-for-tat retaliation and escalation.

Historically, it has been proved that having weapons is not enough to guarantee a reasonable measure of safety from terrorism and rogue states; countermeasures are also needed, both to make any deterrent credible and to negate or at least mitigate the effects of a terrorist attack. Some people who wear seatbelts die in car crashes; some people who are taken to hospital in ambulances, even in peace-time, die. Sometimes, lifebelts and lifeboats cannot save lives at sea. This lack of a 100% success rate in saving lives doesn't disprove the value of everyday precautions or of hospitals and medicine. Hospitals don't lull motorists into a false sense of security, causing them to drive faster and cause more accidents. Like-minded 'arguments' against ABM and civil defense are similarly vacuous.

'As long as the threat from Iran persists, we will go forward with a missile system that is cost-effective and proven. If the Iranian threat is eliminated, we will have a stronger basis for security, and the driving force for missile-defense construction in Europe will be removed.'

- President Obama, Prague Castle, Czech Republic, 4 April 2009.

Before 9/11, Caspar Weinberger was quizzed by skeptical critics on the BBC News program *Talking Point*, Friday, May 4, 2001: *Caspar Weinberger quizzed on new US Star Wars ABM plans*:

‘The [ABM] treaty was in 1972 ... The theory ... supporting the ABM treaty [which prohibits ABM, thus making nations vulnerable to terrorism] ... that it will prevent an arms race ... is perfect nonsense because we have had an arms race all the time we have had the ABM treaty, and we have seen the greatest increase in proliferation of nuclear weapons that we have ever had. ... So the ABM treaty preventing an arms race is total nonsense. ...

‘You have to understand that without any defences whatever you are very vulnerable. **It is like saying we don't like chemical warfare - we don't like gas attacks - so we are going to give up and promise not to have any defences ever against them and that of course would mean then we are perfectly safe. ...**

‘The Patriot was not a failure in the Gulf War - the Patriot was one of the things which defeated the Scud and in effect helped us win the Gulf War. One or two of the shots went astray but that is true of every weapon system that has ever been invented. ...

‘The fact that a missile defence system wouldn't necessarily block a suitcase bomb is certainly not an argument for not proceeding with a missile defence when a missile that hits can wipe out hundreds of thousands of lives in a second. ...

‘The **curious thing about it is that missile defence is not an offensive weapon system - missile defence cannot kill anybody. Missile defence can help preserve and protect your people and our allies, and the idea that you are somehow endangering people by having a defence strikes me almost as absurd as saying you endanger people by having a gas mask in a gas attack. ...**

‘President Bush said that we were going ahead with the defensive system but we would make sure that nobody felt we had offensive intentions because we would accompany it by a unilateral reduction of our nuclear arsenal. It seems to me to be a rather clear statement that proceeding with the missile defence system would mean fewer arms of this kind.

‘You have had your arms race all the time that the ABM treaty was in effect and now you have an enormous accumulation and increase of nuclear weapons and that was your arms race promoted by the ABM treaty. Now if you abolish the ABM treaty you are not going to get another arms race - *you have got the arms already there* - and if you accompany the missile defence construction with the unilateral reduction of our own nuclear arsenal then it seems to me you are finally getting some kind of inducement to reduce these weapons.’

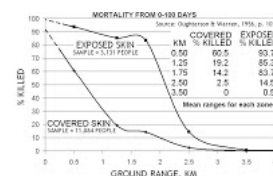
Before the ABM system is in place, and afterwards if ABM fails to be 100% effective in an attack, or is bypassed by terrorists using a bomb in a suitcase or in a ship, civil defense is required and can be effective at saving lives:

‘Paradoxically, the more damaging the effect, that is the farther out its lethality stretches, the more can be done about it, because in the last fall of its power it covers vast areas, where small mitigations will save very large numbers of people.’

- Peter Laurie, *Beneath the City Streets: A Private Inquiry into the Nuclear Preoccupations of Government*, Penguin, 1974.

‘The purpose of a book is to save people [the] time and effort of digging things out for themselves. ... we have tried to leave the reader with something tangible – what a certain number of calories, roentgens, etc., means in terms of an effect on the human being. ... we must think of the people we are writing for.’

– Dr Samuel Glasstone, DSc, letter dated 1 February 1957 to Colonel Dent L. Lay, Chief, Weapons Effects Division, U.S. Armed Forces Special Weapons Project, Washington, D.C., pages 2 and 4, concerning the preparation of *The Effects of Nuclear Weapons*.



Glasstone and Dolan stated in *The Effects of Nuclear Weapons* (1977), Table 12.17 on page 546, that the median distance in Hiroshima

for survival after 20 days was 0.12 miles for people in concrete buildings and 1.3 miles for people standing outdoors. Therefore the median distances for survival in modern city buildings and in the open differed by a factor of 11 for Hiroshima; the difference in areas was thus a factor of 11^2 or about 120. Hence, taking cover in modern city buildings reduces the casualty rates and the risks of being killed by a factor of 120 for Hiroshima conditions, contrary to popular media presented political propaganda that civil defence is hopeless. This would reduce 120,000 casualties to 1,000 casualties.

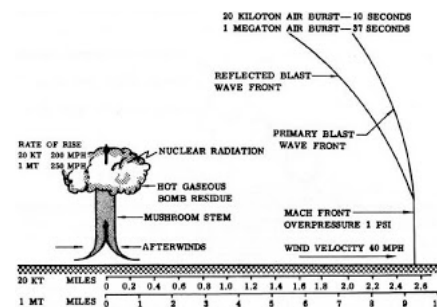
From Dr Glasstone's *Effects of Nuclear Weapons* (1962/64 ed., page 631): 'At distances between 0.3 and 0.4 mile from ground zero in Hiroshima the average survival rate, for at least 20 days after the nuclear explosion, was less than 20 percent. Yet in two reinforced concrete office buildings, at these distances, almost 90 percent of the nearly 800 occupants survived more than 20 days, although some died later of radiation injury. Furthermore, of approximately 3,000 school students who were in the open and unshielded within a mile of ground zero at Hiroshima, about 90 percent were dead or missing after the explosion. But of nearly 5,000 students in the same zone who were shielded in one way or another, only 26 percent were fatalities. ... survival in Hiroshima was possible in buildings at such distances that the overpressure in the open was 15 to 20 pounds per square inch. ... it is evident ... that the area over which protection could be effective in saving lives is roughly eight to ten times as great as that in which the chances of survival are small.'

Lord Mayhew, House of Lords debate on Civil Defence (General Local Authority Functions) Regulations, Hansard, vol. 444, cc. 523-49, 1 November 1983: '... if there had been effective civil defence at Hiroshima probably thousands of lives would have been saved and much human suffering would have been avoided. There is no question about it. ...'

Since the 1977 update by Glasstone and Dolan, extensive new updates to EM-1 for a further revised edition of *The Effects of Nuclear Weapons* have not actually been published with unlimited public distribution, due to President Carter's 1979 executive order which transferred responsibility for civil defense from the jurisdiction of the U.S. Department of Defense's Defense Civil Preparedness Agency to the new agency (which is not an Agency of the U.S. Department of Defense, and is not concerned with the analysis of nuclear weapons test effects data), the Federal Emergency Management Agency. However, the February 1997 U.S. Department of Defense's Defense Special Weapons Agency 0602715H RDT&E Budget Item Justification Sheet (R-2 Exhibit) states that a revision of Glasstone and Dolan's unclassified *Effects of Nuclear Weapons* was budgeted for 1997-9:

"FY 1997 Plans: ... Provide text to update Glasstone's book, *The Effects of Nuclear Weapons*, the standard reference for nuclear weapons effects. ... Update the unclassified textbook entitled, *The Effects of Nuclear Weapons*. ... Continue revision of Glasstone's book, *The Effects of Nuclear Weapons*, the standard reference for nuclear weapons effects. ... FY1999 Plans ... Disseminate updated *The Effects of Nuclear Weapons*."

The new publications are either classified or unclassified with limited distribution restrictions (e.g., Bridgman's *Introduction to the Physics of Nuclear Weapons Effects*, which includes several chapters on nuclear weapons design to enable initial radiation outputs to be calculated precisely) which prevents up-to-date basic nuclear effects information to justify civil defense against the latest nuclear threats from being widely disseminated; the books are printed for use only by government agencies. The problem with this approach is that widespread public understanding of the best information for civil defense countermeasures is prevented.



'The evidence from Hiroshima indicates that blast survivors, both injured and uninjured, in buildings later consumed by fire [caused by the blast

overturning charcoal braziers used for breakfast in inflammable wooden houses filled with easily ignitable bamboo furnishings and paper screens] were generally able to move to safe areas following the explosion. Of 130 major buildings studied by the U.S. Strategic Bombing Survey ... 107 were ultimately burned out ... Of those suffering fire, about 20 percent were burning after the first half hour. The remainder were consumed by fire spread, some as late as 15 hours after the blast. This situation is not unlike the one our computer-based fire spread model described for Detroit.’

- Defense Civil Preparedness Agency, U.S. Department of Defense, *DCPA Attack Environment Manual, Chapter 3: What the Planner Needs to Know About Fire Ignition and Spread*, report CPG 2-1A3, June 1973, Panel 27.

The Effects of the Atomic Bomb on Hiroshima, Japan, US Strategic Bombing Survey, Pacific Theatre, report 92, volume 2 (May 1947, secret):

Volume one, page 14:

“... the city lacked buildings with fire-protective features such as automatic fire doors and automatic sprinkler systems”, and pages 26-28 state the heat flash in Hiroshima was only:

“... capable of starting primary fires in exposed, easily combustible materials such as dark cloth, thin paper, or dry rotted wood exposed to direct radiation at distances usually within 4,000 feet of the point of detonation (AZ).”

Volume two examines the firestorm and the ignition of clothing by the thermal radiation flash in Hiroshima:

Page 24:

“Scores of persons throughout all sections of the city were questioned concerning the ignition of clothing by the flash from the bomb. ... Ten school boys were located during the study who had been in school yards about 6,200 feet east and 7,000 feet west, respectively, from AZ [air zero]. These boys had flash burns on the portions of their faces which had been directly exposed to rays of the bomb. The boys’ stories were consistent to the effect that their clothing, apparently of cotton materials, ‘smoked,’ but did not burst into flame. ... a boy’s coat ... started to smoulder from heat rays at 3,800 feet from AZ.” [Contrast this to the obfuscation and vagueness in Glasstone, *The Effects of Nuclear Weapons*!]

Page 88:

“Ignition of the City. ... Only directly exposed surfaces were flash burned. Measured from GZ, flash burns on wood poles were observed at 13,000 feet, granite was roughened or spalled by heat at 1,300 feet, and vitreous tiles on roofs were blistered at 4,000 feet. ... six persons who had been in reinforced-concrete buildings within 3,200 feet of air zero stated that black cotton blackout curtains were ignited by radiant heat ... dark clothing was scorched and, in some cases, reported to have burst into flame from flash heat [*although as the 1946 unclassified USSBS report admits, most immediately beat the flames out with their hands without sustaining injury, because the clothing was not drenched in gasoline, unlike peacetime gasoline tanker road accident victims*]

“... but a large proportion of over 1,000 persons questioned was in agreement that a great majority of the original fires was started by debris falling on kitchen charcoal fires, by industrial process fires, or by electric short circuits. Hundreds of fires were reported to have started in the centre of the city within 10 minutes after the explosion. Of the total number of buildings investigated [135 buildings are listed] 107 caught fire, and in 69 instances, the probable cause of initial ignition of the buildings or their contents was as follows: (1) 8 by direct radiated heat from the bomb (primary fire), (2) 8 by secondary sources, and (3) 53 by fire spread from exposed [wooden] buildings.”

‘It is true that the Soviets have tested nuclear weapons of a yield higher than that which we thought necessary, but the 100-megaton bomb of which they spoke two years ago does not and will not change the balance of strategic power. The United States has chosen, deliberately, to concentrate on more mobile and more efficient weapons, with lower but entirely sufficient yield ...’ - President John F. Kennedy in his television broadcast to the American public, 26 July 1963.

‘During World War II many large cities in England, Germany, and Japan were subjected to terrific attacks by high-explosive and incendiary bombs.

Yet, when proper steps had been taken for the protection of the civilian population and for the restoration of services after the bombing, there was little, if any, evidence of panic. It is the purpose of this book to state the facts concerning the atomic bomb, and to make an objective, scientific analysis of these facts. It is hoped that as a result, although it may not be feasible completely to allay fear, it will at least be possible to avoid panic.'

– **Dr George Gamow (the big bang cosmologist)**, Dr **Samuel Glasstone**, DSc (Executive Editor of the book), and **Professor Joseph O. Hirschfelder**, *The Effects of Atomic Weapons*, Chapter 1, p. 1, Paragraph 1.3, U.S. Department of Defense, September 1950.

'The consequences of a multiweapon nuclear attack would certainly be grave ... Nevertheless, recovery should be possible if plans exist and are carried out to restore social order and to mitigate the economic disruption.'

– **Philip J. Dolan**, editor of *Nuclear Weapons Employment* FM 101-31 (1963), *Capabilities of Nuclear Weapons* DNA-EM-1 (1972), and *The Effects of Nuclear Weapons* (1977), Stanford Research Institute, Appendix A of the **U.S. National Council on Radiological protection (NCRP) symposium *The Control of Exposure to the Public of Ionising Radiation in the Event of Accident or Attack*, 1981.**

'Suppose the bomb dropped on Hiroshima had been 1,000 times as powerful ... It could not have killed 1,000 times as many people, but at most the entire population of Hiroshima ... [regarding the hype about various nuclear "overkill" exaggerations] there is enough water in the oceans to drown everyone ten times.'

– **Professor Brian Martin, PhD (physics)**, 'The global health effects of nuclear war', *Current Affairs Bulletin*, Vol. 59, No. 7, December 1982, pp. 14-26.

In 1996, half a century after the nuclear detonations, data on cancers from the Hiroshima and Nagasaki survivors was published by D. A. Pierce et al. of the Radiation Effects Research Foundation, RERF (*Radiation Research* vol. 146 pp. 1-27; *Science* vol. 272, pp. 632-3) for 86,572 survivors, of whom 60% had received bomb doses of over 5 mSv (or 500 millirem in old units) suffering 4,741 cancers of which only 420 were due to radiation, consisting of 85 leukemias and 335 solid cancers.

'Today we have a population of 2,383 [radium dial painter] cases for whom we have reliable body content measurements. . . . All 64 bone sarcoma [cancer] cases occurred in the 264 cases with more than 10 Gy [1,000 rads], while no sarcomas appeared in the 2,119 radium cases with less than 10 Gy.'

– **Dr Robert Rowland, Director of the Center for Human Radiobiology**, *Bone Sarcoma in Humans Induced by Radium: A Threshold Response?*, *Proceedings of the 27th Annual Meeting, European Society for Radiation Biology, Radioprotection colloquies*, Vol. 32CI (1997), pp. 331-8.

Zbigniew Jaworowski, 'Radiation Risk and Ethics: Health Hazards, Prevention Costs, and Radiophobia', *Physics Today*, April 2000, pp. 89-90:

'... it is important to note that, given the effects of a few seconds of irradiation at Hiroshima and Nagasaki in 1945, a threshold near 200 mSv may be expected for leukemia and some solid tumors. [Sources: UNSCEAR, *Sources and Effects of Ionizing Radiation*, New York, 1994; W. F. Heidenreich, et al., *Radiat. Environ. Biophys.*, vol. 36 (1999), p. 205; and B. L. Cohen, *Radiat. Res.*, vol. 149 (1998), p. 525.] For a protracted lifetime natural exposure, a threshold may be set at a level of several thousand millisieverts for malignancies, of 10 grays for radium-226 in bones, and probably about 1.5-2.0 Gy for lung cancer after x-ray and gamma irradiation. [Sources: G. Jaikrishan, et al., *Radiation Research*, vol. 152 (1999), p. S149 (for natural exposure); R. D. Evans, *Health Physics*, vol. 27 (1974), p. 497 (for radium-226); H. H. Rossi and M. Zaider, *Radiat. Environ. Biophys.*, vol. 36 (1997), p. 85 (for radiogenic lung cancer).] The hormetic effects, such as a decreased cancer incidence at low doses and increased longevity, may be used as a guide for estimating practical thresholds and for setting standards. ...

'Though about a hundred of the million daily spontaneous DNA damages per cell remain unrepaired or misrepaired, apoptosis, differentiation, necrosis, cell cycle regulation, intercellular interactions, and the immune system remove about 99% of the altered cells. [Source: R. D. Stewart, *Radiation Research*, vol. 152 (1999), p. 101.] ...

'[Due to the Chernobyl nuclear accident in 1986] as of 1998 (according to UNSCEAR), a total of 1,791 thyroid cancers in children had been registered. About 93% of the youngsters have a prospect of full recovery. [Source: C. R. Moir and R. L. Telander, *Seminars in Pediatric Surgery*,

vol. 3 (1994), p. 182.] ... The highest average thyroid doses in children (177 mGy) were accumulated in the Gomel region of Belarus. The highest incidence of thyroid cancer (17.9 cases per 100,000 children) occurred there in 1995, which means that the rate had increased by a factor of about 25 since 1987.

‘This rate increase was probably a result of improved screening [not radiation!]. Even then, the incidence rate for occult thyroid cancers was still a thousand times lower than it was for occult thyroid cancers in nonexposed populations (in the US, for example, the rate is 13,000 per 100,000 persons, and in Finland it is 35,600 per 100,000 persons). Thus, given the prospect of improved diagnostics, there is an enormous potential for detecting yet more [fictitious] "excess" thyroid cancers. In a study in the US that was performed during the period of active screening in 1974-79, it was determined that the incidence rate of malignant and other thyroid nodules was greater by 21-fold than it had been in the pre-1974 period. [Source: Z. Jaworowski, *21st Century Science and Technology*, vol. 11 (1998), issue 1, p. 14.]’

‘Professor **Edward Lewis** used data from four independent populations exposed to radiation to demonstrate that the incidence of leukemia was linearly related to the accumulated dose of radiation. ... Outspoken scientists, including Linus Pauling, used **Lewis**’s risk estimate to inform the public about the danger of nuclear fallout by estimating the number of leukemia deaths that would be caused by the test detonations. In May of 1957 **Lewis**’s analysis of the radiation-induced human leukemia data was published as a lead article in *Science* magazine. In June he presented it before the Joint Committee on Atomic Energy of the US Congress.’ – Abstract of thesis by Jennifer Caron, *Edward Lewis and Radioactive Fallout: the Impact of Caltech Biologists Over Nuclear Weapons Testing in the 1950s and 60s*, Caltech, January 2003.

Dr John F. Loutit of the Medical Research Council, Harwell, England, in 1962 wrote a book called *Irradiation of Mice and Men* (University of Chicago Press, Chicago and London), discrediting the pseudo-science from geneticist **Edward Lewis** on pages 61, and 78-79:

‘... Mole [R. H. Mole, *Brit. J. Radiol.*, v32, p497, 1959] gave different groups of mice an integrated total of 1,000 r of X-rays over a period of 4 weeks. But the dose-rate - and therefore the radiation-free time between fractions - was varied from 81 r/hour intermittently to 1.3 r/hour continuously. The incidence of leukemia varied from 40 per cent (within 15 months of the start of irradiation) in the first group to 5 per cent in the last compared with 2 per cent incidence in irradiated controls. ...

‘What **Lewis** did, and which I have not copied, was to include in his table another group - spontaneous incidence of leukemia (Brooklyn, N.Y.) - who are taken to have received only natural background radiation throughout life at the very low dose-rate of 0.1-0.2 rad per year: the best estimate is listed as 2×10^{-6} like the others in the table. But the value of 2×10^{-6} was not calculated from the data as for the other groups; it was merely adopted. By its adoption and multiplication with the average age in years of Brooklynners - 33.7 years and radiation dose per year of 0.1-0.2 rad - a mortality rate of 7 to 13 cases per million per year due to background radiation was deduced, or some 10-20 per cent of the observed rate of 65 cases per million per year. ...

‘All these points are very much against the basic hypothesis of **Lewis** of a linear relation of dose to leukemic effect irrespective of time. Unhappily it is not possible to claim for **Lewis**’s work as others have done, “It is now possible to calculate - within narrow limits - how many deaths from leukemia will result in any population from an increase in fall-out or other source of radiation” [Leading article in *Science*, vol. 125, p. 963, 1957]. This is just wishful journalese.

‘The burning questions to me are not what are the numbers of leukemia to be expected from atom bombs or radiotherapy, but what is to be expected from natural background Furthermore, to obtain estimates of these, I believe it is wrong to go to [1950s inaccurate, dose rate effect ignoring, data from] atom bombs, where the radiations are qualitatively different [i.e., including effects from neutrons] and, more important, the dose-rate outstandingly different.’

Samuel Glasstone and Philip J. Dolan, *The Effects of Nuclear Weapons*, 3rd ed., 1977, pp. 611-3:

‘From the earlier studies of radiation-induced mutations, made with fruitflies [by Nobel Laureate Hermann J. Muller and other geneticists who worked on plants, who falsely hyped their insect and plant data as valid for mammals like humans during the June 1957 U.S. Congressional Hearings on fallout effects], it appeared that the number (or frequency) of mutations in a given population ... is proportional to the total dose ... More recent experiments with mice, however, have shown that these conclusions need to be revised, at least for mammals. [*Mammals are biologically closer to humans, in respect to DNA repair mechanisms, than short-lived insects whose life cycles are too small to have forced the evolutionary development of advanced DNA repair mechanisms, unlike mammals that need to survive for decades before reproducing.*] When exposed to X-rays or

gamma rays, the mutation frequency in these animals has been found to be dependent on the exposure (or dose) rate ...

‘At an exposure rate of 0.009 roentgen per minute [0.54 R/hour], the total mutation frequency in female mice is indistinguishable from the spontaneous frequency. [Emphasis added.] There thus seems to be an exposure-rate threshold below which radiation-induced mutations are absent ... with adult female mice ... a delay of at least seven weeks between exposure to a substantial dose of radiation, either neutrons or gamma rays, and conception causes the mutation frequency in the offspring to drop almost to zero. ... **recovery** in the female members of the population would bring about a substantial reduction in the ‘load’ of mutations in subsequent generations.’

George Bernard Shaw cynically explains groupthink brainwashing bias:

‘We cannot help it because we are so constituted that we always believe finally what we wish to believe. The moment we want to believe something, we suddenly see all the arguments for it and become blind to the arguments against it. The moment we want to disbelieve anything we have previously believed, we suddenly discover not only that there is a mass of evidence against, but that this evidence was staring us in the face all the time.’

From the essay titled ‘What is Science?’ by Professor Richard P. Feynman, presented at the fifteenth annual meeting of the National Science Teachers Association, 1966 in New York City, and published in *The Physics Teacher*, vol. 7, issue 6, 1968, pp. 313-20:

‘... great religions are dissipated by following form without remembering the direct content of the teaching of the great leaders. In the same way, it is possible to follow form and call it science, but that is pseudo-science. In this way, we all suffer from the kind of tyranny we have today in the many institutions that have come under the influence of pseudoscientific advisers.

‘We have many studies in teaching, for example, in which people make observations, make lists, do statistics, and so on, but these do not thereby become established science, established knowledge. They are merely an imitative form of science analogous to the South Sea Islanders’ airfields - radio towers, etc., made out of wood. The islanders expect a great airplane to arrive. They even build wooden airplanes of the same shape as they see in the foreigners’ airfields around them, but strangely enough, their wood planes do not fly. The result of this pseudoscientific imitation is to produce experts, which many of you are. ... you teachers, who are really teaching children at the bottom of the heap, can maybe doubt the experts. As a matter of fact, I can also define science another way: Science is the belief in the ignorance of experts.’

Richard P. Feynman, ‘This Unscientific Age’, in *The Meaning of It All*, Penguin Books, London, 1998, pages 106-9:

‘Now, I say if a man is absolutely honest and wants to protect the populace from the effects of radioactivity, which is what our scientific friends often say they are trying to do, then he should work on the biggest number, not on the smallest number, and he should try to point out that the [natural cosmic] radioactivity which is absorbed by living in the city of Denver is so much more serious [than the smaller doses from nuclear explosions] ... that all the people of Denver ought to move to lower altitudes.’

Feynman is *not* making a point about low level radiation effects, but about the politics of ignoring the massive natural background radiation dose, while provoking hysteria over much smaller measured fallout pollution radiation doses. Why is the anti-nuclear lobby so concerned about banning nuclear energy - which is not possible even in principle since most of our nuclear radiation is from the sun and from supernova debris contaminating the Earth from the explosion that created the solar system circa 4,540 million years ago - when they could cause much bigger radiation dose reductions to the population by concentrating on the bigger radiation source, natural background radiation. It is possible to shield natural background radiation by the air, e.g. by moving the population of high altitude cities to lower altitudes where there is more air between the people and outer space, or banning the use of high-altitude jet aircraft. The anti-nuclear lobby, as Feynman stated back in the 1960s, didn’t crusade to reduce the bigger dose from background radiation. Instead they chose to argue against the *much smaller* doses from fallout pollution. Feynman’s argument is still today falsely interpreted as a political statement, when it is actually exposing pseudo-science and countering political propaganda. It is still ignored by the media. It has been pointed out by Senator Hickenlooper on page 1060 of the May-June 1957 U.S. Congressional Hearings before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, *The Nature of Radioactive Fallout and Its Effects on Man*:

‘I presume all of us would earnestly hope that we never had to test atomic weapons ... but by the same token I presume that we want to save thousands of lives in this country every year and we could just abolish the manufacture of [road accident causing] automobiles ...’

Dihydrogen monoxide is a potentially very dangerous chemical containing hydrogen and oxygen which has caused numerous severe burns by scalding

and deaths by drowning, contributes to the greenhouse effect, accelerates corrosion and rusting of many metals, and contributes to the erosion of our natural landscape: 'Dihydrogen monoxide (DHMO) is colorless, odorless, tasteless, and kills uncounted thousands of people every year. Most of these deaths are caused by accidental inhalation of DHMO, but the dangers of dihydrogen monoxide do not end there. Prolonged exposure to its solid form causes severe tissue damage. Symptoms of DHMO ingestion can include excessive sweating and urination, and possibly a bloated feeling, nausea, vomiting and body electrolyte imbalance. For those who have become dependent, DHMO withdrawal means certain death.'

From the site for the petition against dihydrogen monoxide: **'Please sign this petition and help stop This Invisible Killer. Get the government to do something now. ... Contamination Is Reaching Epidemic Proportions! Quantities of dihydrogen monoxide have been found in almost every stream, lake, and reservoir in America today. But the pollution is global, and the contaminant has even been found in Antarctic ice. DHMO has caused millions of dollars of property damage in the Midwest, and recently California.'**

A recent example of the pseudoscientific radiation 'education' masquerading as science that Feynman (quoted above) objected to in the 1960s was published in 2009 in an article called 'The proportion of childhood leukaemia incidence in Great Britain that may be caused by natural background ionizing radiation' in *Leukemia*, vol. 23 (2009), pp. 770–776, which falsely asserts - in contradiction to the evidence that the no-threshold model is *contrary* to Hiroshima and Nagasaki data: 'Risk models based primarily on studies of the Japanese atomic bomb survivors imply that low-level exposure to ionizing radiation, including ubiquitous natural background radiation, also raises the risk of childhood leukaemia. Using two sets of recently published leukaemia risk models and estimates of natural background radiation red-bone-marrow doses received by children, about 20% of the cases of childhood leukaemia in Great Britain are predicted to be attributable to this source.' The authors of this pseudoscience which is the opposite of the facts are R. Wakeford (Dalton Nuclear Institute, University of Manchester, Manchester, UK), G. M. Kendall (Childhood Cancer Research Group, Oxford, UK), and M. P. Little (Department of Epidemiology and Public Health, Imperial College, London, UK). It is disgusting and sinful that the facts about childhood leukemia are being lied on so blatantly for non-scientific purposes, and it is to be hoped that these leukemia investigators will either correct their errors or alternatively be banned from using scientific literature to promote false dogma for deception until they mend the error of their ways and repent their sins in this matter.

Protein P53, discovered only in 1979, is encoded by gene TP53, which occurs on human chromosome 17. P53 also occurs in other mammals including mice, rats and dogs. P53 is one of the proteins which continually repairs breaks in DNA, which easily breaks at body temperature: the DNA in each cell of the human body suffers at least two single strand breaks every second, and one double strand (i.e. complete double helix) DNA break occurs at least once every 2 hours (5% of radiation-induced DNA breaks are double strand breaks, while 0.007% of spontaneous DNA breaks at body temperature are double strand breaks)! Cancer occurs when several breaks in DNA happen to occur by chance at nearly the same time, giving several loose strand ends at once, which repair proteins like P53 then repair incorrectly, causing a mutation which can be proliferated somatically. This cannot occur when only one break occurs, because only two loose ends are produced, and P53 will reattach them correctly. But if low-LET ionising radiation levels are increased to a certain extent, causing more single strand breaks, P53 works faster and is able deal with faster breaks as they occur, so that multiple broken strand ends do not arise. This prevents DNA strands being repaired incorrectly, and prevents cancer - a result of mutation caused by faults in DNA - from arising. Too much radiation of course overloads the P53 repair mechanism, and then it cannot repair breaks as they occur, so multiple breaks begin to appear and loose ends of DNA are wrongly connected by P53, causing an increased cancer risk.

1. DNA-damaging free radicals are equivalent to a source of sparks which is always present naturally.
2. Cancer is equivalent the fire you get if the sparks are allowed to ignite the gasoline, i.e. if the free radicals are allowed to damage DNA without the damage being repaired.
3. Protein P53 is equivalent to a fire suppression system which is constantly damping out the sparks, or repairing the damaged DNA so that cancer doesn't occur.

In this way of thinking, the 'cause' of cancer will be down to a failure of a DNA repairing enzyme like protein P53 to repair the damage.

Dr Jane Orient, 'Homeland Security for Physicians', *Journal of American Physicians and Surgeons*, vol. 11, number 3, Fall 2006, pp. 75-9:

'In the 1960s, a group of activist physicians called Physicians for Social Responsibility (PSR) undertook to "educate the medical profession and the

world about the dangers of nuclear weapons," beginning with a series of articles in the *New England Journal of Medicine*. [Note that journal was publishing information for anti-civil defense propaganda back in 1949, e.g. the article in volume 241, pp. 647-53 of *New England Journal of Medicine* which falsely suggests that civil defense in nuclear war would be hopeless because a single burned patient in 1947 with 40% body area burns required 42 oxygen tanks, 36 pints of plasma, 40 pints of whole blood, 104 pints of fluids, 4,300 m of gauze, 3 nurses and 2 doctors. First, only unclothed persons in direct line of sight without shadowing can get 40% body area burns from thermal radiation, second, duck and cover offers protection in a nuclear attack warning, and G. V. LeRoy had already published, two years earlier, in *J.A.M.A.*, volume 134, 1947, pp. 1143-8, that less than 5% of burns in Hiroshima and Nagasaki were caused by building and debris fires. In medicine it is always possible to expend vast resources on patients who are fatally injured. In a mass casualty situation, doctors should not give up just because they don't have unlimited resources; as at Hiroshima and Nagasaki, they would need to do their best with what they have.] On its website, www.psr.org, the group boasts that it "led the campaign to end atmospheric nuclear testing." With this campaign, the linear no-threshold (LNT) theory of radiation carcinogenesis became entrenched. It enabled activists to calculate enormous numbers of potential casualties by taking a tiny risk and multiplying it by the population of the earth. As an enduring consequence, the perceived risks of radiation are far out of proportion to actual risks, causing tremendous damage to the American nuclear industry. ... Efforts to save lives were not only futile, but unethical: Any suggestion that nuclear war could be survivable increased its likelihood and was thus tantamount to warmongering, PSR spokesmen warned. ...

'For the mindset that engendered and enables this situation, which jeopardizes the existence of the United States as a nation as well as the lives of millions of its citizens, some American physicians and certain prestigious medical organizations bear a heavy responsibility.

'Ethical physicians should stand ready to help patients to the best of their ability, and not advocate sacrificing them in the name of a political agenda. **Even very basic knowledge, especially combined with simple, inexpensive advance preparations, could save countless lives.'**

Dr Theodore B. Taylor, *Proceedings of the Second Interdisciplinary Conference on Selected Effects of a General War*, DASIAC Special Report 95, July 1969, vol. 2, DASA-2019-2, AD0696959, page 298 (also [linked here](#)):

'I must just say that as far as I'm concerned I have had some doubts about whether we should have had a civil defense program in the past. I have no doubt whatsoever now, for this reason, that I've seen **ways in which the deterrent forces can fail to hold things off, so that no matter what our national leaders do, criminal organizations, what have you, groups of people over which we have no control whatsoever, can threaten other groups of people.'**

This point of Taylor is the key fact on the morality. Suppose we disarm and abandon nuclear power. That won't stop fallout from a war, terrorists, or a foreign reactor blast from coming. Civil defence knowledge is needed. Even when America has ABM, it will be vulnerable to wind carried fallout. No quantity of pacifist hot air will protect people against radiation.

Charles J. Hitch and Roland B. McKean of the RAND Corporation in their 1960 book *The Economics of Defense in the Nuclear Age*, Harvard University Press, Massachusetts, pp. 310-57:

'With each side possessing only a small striking force, a small amount of cheating would give one side dominance over the other, and the incentive to cheat and prepare a preventative attack would be strong ... With each side possessing, say, several thousand missiles, a vast amount of cheating would be necessary to give one side the ability to wipe out the other's striking capability. ... the more extensive a disarmament agreement is, the smaller the force that a violator would have to hide in order to achieve complete domination. Most obviously, "the abolition of the weapons necessary in a general or 'unlimited' war" would offer the most insuperable obstacles to an inspection plan, since the violator could gain an overwhelming advantage from the concealment of even a few weapons.'

Disarmament after World War I caused the following problem which led to World War II (reported by Winston S. Churchill in the London Daily Express newspaper of November 1, 1934):

'Germany is arming secretly, illegally and rapidly. A reign of terror exists in Germany to keep secret the feverish and terrible preparations they are making.'

British Prime Minister Thatcher's address to the United Nations General Assembly on disarmament on 23 June 1982, where she pointed out that in

the years since the nuclear attacks on Hiroshima and Nagasaki, 10 million people had been killed by 140 non-nuclear conflicts:

‘The fundamental risk to peace is not the existence of weapons of particular types. It is the disposition on the part of some states to impose change on others by resorting to force against other nations ... Aggressors do not start wars because an adversary has built up his own strength. They start wars because they believe they can gain more by going to war than by remaining at peace.’

J. D. Culshaw, the then Director of the U.K. Home Office Scientific Advisory Branch, stated in his article in the Scientific Advisory Branch journal *Fission Fragments*, September 1972 (issue No. 19), classified 'Restricted':

'Apart from those who don't want to know or can't be bothered, there seem to be three major schools of thought about the nature of a possible Third World War ...

* 'The first group think of something like World War II but a little worse ...

* '... the second of World War II but very much worse ...

* 'and the third group think in terms of a catastrophe ...

'When the Armageddon concept is in favour, the suggestion that such problems exist leads to "way out" research on these phenomena, and it is sufficient to mention a new catastrophic threat [e.g., 10 years later this was done by Sagan with "nuclear winter" hype, which turned out to be fake because modern concrete cities can't produce firestorms like 1940s wooden-built areas of Hamburg, Dresden and Hiroshima] to stimulate research into the possibilities of it arising. The underlying appeal of this concept is that if one could show that the execution of all out nuclear, biological or chemical warfare would precipitate the end of the world, no one but a mad man would be prepared to initiate such a war. [However, as history proves, plenty of mad men end up gaining power and leading countries into wars.]'

J. K. S. Clayton, then Director of the U.K. Home Office Scientific Advisory Branch, stated in his introduction, entitled *The Challenge - Why Home Defence?*, to the 1977 Home Office Scientific Advisory Branch *Training Manual for Scientific Advisers*:

'Since 1945 we have had nine wars - in Korea, Malaysia and Vietnam, between China and India, China and Russia, India and Pakistan and between the Arabs and Israelis on three occasions. We have had confrontations between East and West over Berlin, Formosa and Cuba. There have been civil wars or rebellions in no less than eleven countries and invasions or threatened invasions of another five. Whilst it is not suggested that all these incidents could have resulted in major wars, they do indicate the aptitude of mankind to resort to a forceful solution of its problems, sometimes with success. ...'

It is estimated that Mongol invaders exterminated 35 million Chinese between 1311-40, without modern weapons. Communist Chinese killed 26.3 million dissenters between 1949 and May 1965, according to detailed data compiled by the Russians on 7 April 1969. The Soviet communist dictatorship killed 40 million dissenters, mainly owners of small farms, between 1917-59. Conventional (non-nuclear) air raids on Japan killed 600,000 during World War II. The single incendiary air raid on Tokyo on 10 March 1945 killed 140,000 people (more than the total for nuclear bombs on Hiroshima and Nagasaki combined) at much less than the \$2 billion expense of the Hiroshima and Nagasaki nuclear bombs! Non-nuclear air raids on Germany during World War II killed 593,000 civilians.

House of Lords debate *Nuclear Weapons: Destructive Power*, published in Hansard, 14 June 1988:

Lord Hailsham of Saint Marylebone: ‘My Lords, if we are going into the question of lethality of weapons and seek thereby to isolate the nuclear as distinct from the so-called conventional range, is there not a danger that the public may think that Vimy, Passchendaele and Dresden were all right—sort of tea parties—and that nuclear war is something which in itself is unacceptable?’

Lord Trefgarne: ‘My Lords, the policy of making Europe, or the rest of the world, safe for conventional war is not one that I support.’

House of Commons debate *Civil Defence* published in Hansard, 26 October 1983:

Mr. Bill Walker (Tayside, North): ‘I remind the House that more people died at Stalingrad than at Hiroshima or Nagasaki. Yet people talk about fighting a conventional war in Europe as if it were acceptable. One rarely sees demonstrations by the so-called peace

movement against a conventional war in Europe, but it could be nothing but ghastly and horrendous. The casualties would certainly exceed those at Stalingrad, and that cannot be acceptable to anyone who wants peace'

On 29 October 1982, Thatcher stated of the Berlin Wall: 'In every decade since the war the Soviet leaders have been reminded that their pitiless ideology only survives because it is maintained by force. But the day comes when the anger and frustration of the people is so great that force cannot contain it. Then the edifice cracks: the mortar crumbles ... one day, liberty will dawn on the other side of the wall.'

On 22 November 1990, she said: 'Today, we have a Europe ... where the threat to our security from the overwhelming conventional forces of the Warsaw Pact has been removed; where the Berlin Wall has been torn down and the Cold War is at an end. These immense changes did not come about by chance. They have been achieved by strength and resolution in defence, and by a refusal ever to be intimidated.'

'The case for civil defence stands regardless of whether a nuclear deterrent is necessary or not. ... Even if the U.K. were not itself at war, we would be as powerless to prevent fallout from a nuclear explosion crossing the sea as was King Canute to stop the tide.' - U.K. Home Office leaflet, Civil Defence, 1982.

'... peace cannot be guaranteed absolutely. Nobody can be certain, no matter what policies this or any other Government were to adopt, that the United Kingdom would never again be attacked. Also we cannot tell what form such an attack might take. Current strategic thinking suggests that if war were to break out it would start with a period of conventional hostilities of uncertain duration which might or might not escalate to nuclear conflict. ... while nuclear weapons exist there must always be a chance, however small, that they will be used against us [like gas bombs in World War II]. ... as a consequence of war between other nations in which we were not involved fall out from nuclear explosions could fall on a neutral Britain. ... conventional war is not the soft option that is sometimes suggested. It is also too easily forgotten that in World War II some 50 million people died and that conventional weapons have gone on killing people ever since 1945 without respite.' - - **The Minister of State, Scottish Office (Lord Gray of Contin), House of Lords debate on Civil Defence (General Local Authority Functions) Regulations, Hansard, vol. 444, cc. 523-49, 1 November 1983.**

'All of us are living in the light and warmth of a huge hydrogen bomb, 860,000 miles across and 93 million miles away, which is in a state of continuous explosion.' - Dr Isaac Asimov.

'Dr Edward Teller remarked recently that the origin of the earth was somewhat like the explosion of the atomic bomb...' - Dr Harold C. Urey, *The Planets: Their Origin and Development*, Yale University Press, New Haven, 1952, p. ix.

'But compared with a supernova a hydrogen bomb is the merest trifle. For a supernova is equal in violence to about a million million million million hydrogen bombs all going off at the same time.' - Sir Fred Hoyle (1915-2001), *The Nature of the Universe*, Pelican Books, London, 1963, p. 75.

'In fact, physicists find plenty of interesting and novel physics in the environment of a nuclear explosion. Some of the physical phenomena are valuable objects of research, and promise to provide further understanding of nature.' - Dr Harold L. Brode, The RAND Corporation, 'Review of Nuclear Weapons Effects,' *Annual Review of Nuclear Science*, Volume 18, 1968, pp. 153-202.

'It seems that similarities do exist between the processes of formation of single particles from nuclear explosions and formation of the solar system from the debris of a [4 x 10²⁸ megatons of TNT equivalent, type Ia] supernova explosion. We may be able to learn much more about the origin of the earth, by further investigating the process of radioactive fallout from the nuclear weapons tests.' - **Dr Paul K. Kuroda (1917-2001)**, University of Arkansas, 'Radioactive Fallout in Astronomical Settings: Plutonium-244 in the Early Environment of the Solar System,' pages 83-96 of ***Radionuclides in the Environment: A Symposium Sponsored By the Division of Nuclear Chemistry and Technology At the 155th Meeting of the American Chemical Society, San Francisco, California, April 1-3, 1968***, edited by Symposium Chairman Dr Edward C. Freiling (1922-2000) of the U.S. Naval Radiological Defense Laboratory, Advances in Chemistry Series No. 93, American Chemical Society, Washington, D.C., 1970.

Dr Paul K. Kuroda (1917-2001) in 1956 correctly predicted the existence of water-moderated natural nuclear reactors in flooded uranium ore seams, which were discovered in 1972 by French physicist Francis Perrin in three ore deposits at Oklo in Gabon, where sixteen sites operated as natural nuclear reactors with self-sustaining nuclear fission 2,000 million years ago, each lasting several hundred thousand years, averaging 100 kW. The radioactive waste they generated remained in situ for a period of 2,000,000,000 years without escaping. They were discovered during

investigations into why the U-235 content of the uranium in the ore was only 0.7171% instead of the normal 0.7202%. Some of the ore, in the middle of the natural reactors, had a U-235 isotopic abundance of just 0.440%. Kuroda's brilliant paper is entitled, 'On the Nuclear Physical Stability of the Uranium Minerals', published in the *Journal of Chemical Physics*, vol. 25 (1956), pp. 781–782 and 1295–1296.

A type Ia supernova explosion, always yielding 4×10^{28} megatons of TNT equivalent, results from the critical mass effect of the collapse of a white dwarf as soon as its mass exceeds 1.4 solar masses due to matter falling in from a companion star. The degenerate electron gas in the white dwarf is then no longer able to support the pressure from the weight of gas, which collapses, thereby releasing enough gravitational potential energy as heat and pressure to cause the fusion of carbon and oxygen into heavy elements, creating massive amounts of radioactive nuclides, particularly intensely radioactive nickel-56, but half of all other nuclides (including uranium and heavier) are also produced by the **'R' (rapid) process of successive neutron captures by fusion products in supernovae explosions**. Type Ia supernovae occur typically every 400 years in the Milky Way galaxy. On 4 July 1054, Chinese astronomers observed in the sky (without optical instruments) the bright supernova in the constellation Taurus which today is still visible as the Crab Nebula through telescopes. The Crab Nebula debris has a diameter now of 7 light years and is still expanding at 800 miles/second. The supernova debris shock wave triggers star formation when it encounters hydrogen gas in space by compressing it and seeding it with debris; bright stars are observed in the Orion Halo, the 300 light year diameter remains of a supernova. It is estimated that when the solar system was forming 4,540 million years ago, a supernova occurred around 100 light years away, and the heavy radioactive debris shock wave expanded at 1,000 miles/second. Most of the heavy elements including iron, silicon and calcium in the Earth and people are the stable end products of originally radioactive decay chains from the space burst fallout of a 7×10^{26} megatons thermonuclear explosion, created by fusion and successive neutron captures after the implosion of a white dwarf; a supernova explosion.

How would a 10^{55} megaton hydrogen bomb explosion differ from the **big bang**? Ignorant answers biased in favour of curved spacetime (ignoring quantum gravity!) abound, such as claims that explosions can't take place in 'outer space' (disagreeing with the facts from nuclear space bursts by Russia and America in 1962, not to mention natural supernova explosions in space!) and that explosions produce sound waves in air by definition! There are indeed major differences in the nuclear reactions between the big bang and a nuclear bomb. But it is helpful to notice the solid physical fact that implosion systems suggest the mechanism of gravitation: in implosion, TNT is well-known to produce an *inward* force on a bomb core, but Newton's 3rd law says there is an equal and opposite reaction force *outward*. In fact, you can't have a radially outward force without an inward reaction force! It's the rocket principle. The rocket accelerates (with force $F = ma$) *forward* by virtue of the recoil from accelerating the exhaust gas (with force $F = -ma$) in the *opposite* direction! Nothing massive accelerates without an equal and opposite reaction force. Applying this *fact* to the **measured $6 \times 10^{-10} \text{ ms}^{-2} \sim Hc$ cosmological acceleration of matter radially outward** from observers in the universe which **was predicted accurately in 1996** and later observationally discovered in 1999 (by Perlmutter, et al.), we find an outward force $F = ma$ and inward reaction force by the 3rd law. **The inward force allows quantitative predictions, and is mediated by gravitons, predicting gravitation in a checkable way (unlike string theory, which is just a landscape of 10^{500} different perturbative theories and so can't make any falsifiable predictions about gravity)**. So it seems as if nuclear explosions do indeed provide helpful analogies to natural features of the world, and the mainstream lambda-CDM model of cosmology - with its force-fitted unobserved *ad hoc* speculative 'dark energy' - ignores and sweeps under the rug major quantum gravity effects which increase the physical understanding of particle physics, particularly force unification and the relation of gravitation to the existing electroweak $SU(2) \times U(1)$ section of the Standard Model of fundamental forces.

Richard Lieu, Physics Department, University of Alabama, 'Lambda-CDM cosmology: how much suppression of credible evidence, and does the model really lead its competitors, using all evidence?', <http://arxiv.org/abs/0705.2462>.

Even Einstein grasped the possibility that general relativity's lambda-CDM model is at best just a classical approximation to quantum field theory, at the end of his life when he wrote to Besso in 1954:

'I consider it quite possible that physics cannot be based on the [classical differential equation] field principle, i.e., on continuous structures. In that case, nothing remains of my entire castle in the air, [non-quantum] gravitation theory included ...'

'Science is the organized skepticism in the reliability of expert opinion.' - Professor Richard P. Feynman (quoted by Professor Lee Smolin, *The Trouble with Physics*, Houghton-Mifflin, New York, 2006, p. 307).

'The expression of dissenting views may not seem like much of a threat to a powerful organization, yet sometimes it triggers an amazingly hostile

response. The reason is that a single dissenter can puncture an illusion of unanimity. ... Among those suppressed have been the engineers who tried to point out problems with the Challenger space shuttle that caused it to blow up. More fundamentally, suppression is a denial of the open dialogue and debate that are the foundation of a free society. Even worse than the silencing of dissidents is the chilling effect such practices have on others. For every individual who speaks out, numerous others decide to play it safe and keep quiet. More serious than external censorship is the problem of self-censorship.'

— Professor Brian Martin, University of Wollongong, 'Stamping Out Dissent', Newsweek, 26 April 1993, pp. 49-50

In 1896, Sir James Mackenzie-Davidson asked Wilhelm Röntgen, who discovered X-rays in 1895: 'What did you think?' Röntgen replied: 'I did not think, I investigated.' The reason? Cathode ray expert J. J. Thomson in 1894 saw glass fluorescence far from a tube, but due to prejudice (expert opinion) he avoided investigating that X-ray evidence! 'Science is the organized skepticism in the reliability of expert opinion.' - Richard Feynman, in Lee Smolin, *The Trouble with Physics*, Houghton-Mifflin, 2006, p. 307.

Mathematical symbols in this blog: your computer's browser needs access to standard character symbol sets to display Greek symbols for mathematical physics. If you don't have the symbol character sets installed, the density symbol ' ρ ' (*Rho*) will appear as 'r' and the ' π ' (*Pi*) symbol will as 'p', causing confusion with the use of 'r' for radius and 'p' for momentum in formulae. This problem exists with Mozilla Firefox 3, but not with Microsoft Explorer which displays Greek symbols.

About Me



Name: nige

<http://nige.wordpress.com/> <http://quantumfieldtheory.org/> <http://www.math.columbia.edu/~woit/wordpress/?p=273#comment-5322>. <http://www.math.columbia.edu/~woit/wordpress/?p=353&cpag=1#comment-8728>.
<http://www.math.columbia.edu/~woit/wordpress/?p=215#comment-4082>.

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From 1945-62, America tested 216 nuclear weapons in the atmosphere, totalling 154 megatons, with a mean yield of 713 kilotons

From 1949-62, Russia tested 214 nuclear weapons in the atmosphere, totalling 281 megatons, with a mean yield of 1.31 megatons

From 1952-8, Britain tested 21 nuclear weapons in the atmosphere, totalling 10.8 megatons, with a mean yield of 514 kilotons

From 1960-74, France tested 46 nuclear weapons in the atmosphere, totalling 11.4 megatons, with a mean yield of 248 kilotons

From 1964-80, China tested 23 nuclear weapons in the atmosphere, totalling 21.5 megatons, with a mean yield of 935 kilotons

In summary, from 1945-80, America, Russia, Britain, France and China tested 520 nuclear weapons in the atmosphere, totalling 478.7 megatons, with a mean yield of 921 kilotons

Mean yield of the 5,192 nuclear warheads and bombs in the deployed Russian nuclear stockpile as of January 2009: 0.317 Mt. Total yield: 1,646 Mt.

Mean yield of the 4,552 nuclear warheads and bombs in the deployed U.S. nuclear stockpile as of January 2007: 0.257 Mt. Total yield: 1,172 Mt.

For diffraction damage where damage areas scale as the two-thirds power of explosive yield, this stockpile's area damage potential can be compared to the 20,000,000 conventional bombs of 100 kg size (2 megatons of TNT equivalent total *energy*) dropped on Germany during World War II: (Total nuclear bomb blast diffraction damaged ground *area*)/(Total conventional blast diffraction damaged ground *area* to Germany during World War II) = $[4,552 \cdot (0.257 \text{ Mt})^{2/3}] / [20,000,000 \cdot (0.0000001 \text{ Mt})^{2/3}] = 1,840/431 = 4.3$. Thus, although the entire U.S. stockpile has a TNT *energy* equivalent to 586 times that of the 2 megatons of conventional bombs dropped on Germany in World War II, it is only capable of causing 4.3 times as much diffraction type damage area, because *any given amount of explosive energy is far more efficient when distributed over many small explosions than in a single large explosion! Large explosions are inefficient because they cause unintended collateral damage, wasting energy off the target area and injuring or damaging unintended targets!*

In a controlled sample of 36,500 survivors, 89 people got leukemia over a 40 year period, above the number in the unexposed control group. (Data: *Radiation Research*, volume 146, 1996, pages 1-27.) Over 40 years, in 36,500 survivors monitored, there were 176 leukemia deaths which is 89 more than the control (unexposed) group got naturally. There were 4,687 other cancer deaths, but that was merely 339 above the number in the control (unexposed) group, so this is statistically a much smaller rise than the leukemia result. Natural leukemia rates, which are very low in any case, were increased by 51% in the irradiated survivors, but other cancers were merely increased by just 7%. Adding all the cancers together, the total was 4,863 cancers (virtually all natural cancer, nothing whatsoever to do with radiation), which is just 428 more than the unexposed control group. Hence, the total increase over the natural cancer rate due to bomb exposure was only 9%, spread over a period of 40 years. There was no increase whatsoever in genetic malformations.

There should be a note here about how unnatural radioactive pollution is (not) in space: the earth's atmosphere is a radiation shield equivalent to being protected behind a layer of water 10 metres thick. This reduces the cosmic background radiation by a factor of 100 of what it would be without the earth's atmosphere. Away from the largely uninhabited poles, the Earth's magnetic field also protects us against charged cosmic radiations, which are deflected and end up spiralling around the magnetic field at high altitude, in the Van Allen trapped radiation belts. On the Moon, for example, there is no atmosphere or significant magnetic field so the natural background radiation exposure rate at solar minimum is 1 milliRoentgen per hour (about 10 microSieverts/hour) some 100 times that on the Earth (0.010 milliRoentgen per hour or about 0.10 microSieverts/hour). The Apollo astronauts visiting the Moon wore dosimeters and they received an average of 275 milliRoentgens (about 2.75 milliSieverts) of radiation (well over a year's exposure to natural background at sea level) in over just 19.5 days. It is a lot more than that during a solar flare, which is one of the concerns for astronauts to avoid (micrometeorites are another concern in a soft spacesuit).

The higher up you are above sea level, the less of the atmosphere there is between you and space, so the less shielding you have to protect you from the intense cosmic space radiations (emitted by thermonuclear reactors we call 'stars', as well as distant supernovae explosions). At sea level, the air above you constitutes a radiation shield of 10 tons per square metre or the equivalent of having a 10 metres thick water shield between you and outer space. As you go up a mountain or up in an aircraft, the amount of atmosphere between you and space decreases, thus radiation levels increase with altitude because there is less shielding. The normal background radiation exposure rate shoots up by a factor of 20, from 0.010 to 0.20 milliRoentgens per hour, when any airplane ascends from sea level to 36,000 feet cruising altitude. (The now obsolete British Concorde supersonic transport used to maintain radiation-monitoring equipment so that it could drop to lower-altitude flight routes if excessive cosmic radiation due to solar storms were detected.) Flight aircrew get more radiation exposure than many nuclear industry workers at nuclear power plants. Residents of the high altitude city of Denver get 100 milliRoentgens (about 1 milliSievert) more annual exposure than a resident of Washington, D.C., but the mainstream anti-radiation cranks don't campaign for the city to be shut to save kids radiation exposure, for mountain climbing to be banned, etc.!

1994 revised Introduction to Kearny's Nuclear War Survival Skills, by Dr Edward Teller, January 14, 1994:

'If defense is neglected these weapons of attack become effective. They become available and desirable in the eyes of an imperialist dictator, even if his means are limited. Weapons of mass destruction could become equalizers between nations big and small, highly developed and primitive, if defense is neglected. If defense is developed and if it is made available for general prevention of war, weapons of aggression will become less desirable. Thus defense makes war itself less probable. ... One psychological defense mechanism against danger is to forget about it. This attitude is as common as it is disastrous. It may turn a limited danger into a fatal difficulty.'

Advice of Robert Watson-Watt (Chief Scientist on the World War II British Radar Project, defending Britain against enemy attacks): 'Give them the third best to go on with, the second best comes too late, the best never comes.'

From Wikipedia (a source of groupthink): 'Groupthink is a type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analyzing, and evaluating ideas. Individual creativity, uniqueness, and independent thinking are lost in the pursuit of group cohesiveness, as are the advantages of reasonable balance in choice and thought that might normally be obtained by making decisions as a group. During groupthink, members of the group avoid promoting viewpoints outside the comfort zone of consensus thinking. A variety of motives for this may exist such as a desire to avoid being seen as foolish, or a desire to avoid embarrassing or angering other members of the group. Groupthink may cause groups to make hasty, irrational decisions, where individual doubts are set aside, for fear of upsetting the group's balance.'

Links

- ◆ [Google News](#)
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- ◆ [Radiation Effects Research Foundation lumps data together to cover up benefits of low dose radiation in Hiroshima and Nagasaki Life Span Study!](#)
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- ◆ [Colonel Derek L. Duke's factual book on nuclear weapons accidents, *Chasing Loose Nukes, as told to Fred Dungan*](#)
- ◆ [The H-Bomb and the birth of the Universe: 'For 100 Million years after time began, the universe was dark as pitch. The clouds of hydrogen condensed into huge nuclear fireballs. That moment-when the universe first lit up-was the moment of creation that matters...'](#)
- ◆ [American *EMP Interaction* manual: comprehensive theory of both the EMP source mechanism and the EMP pick-up in cables and antenna by electromagnetic inductance \(30 MB PDF file\)](#)
- ◆ [British Mission to Japan, *The Effects of the Atomic Bombs at Hiroshima and Nagasaki*, H. M. Stationery Office, London, 1946 \(high quality 42.5 MB pdf file\).](#)
- ◆ [1950 edition \(high quality 82.7 MB PDF file\) of U.S. Department of Defense book *The Effects of Atomic Weapons*](#)
- ◆ [1957 edition \(high quality 90.8 MB PDF file\) of subsequently deleted sections on nuclear tests of civil defense countermeasures from U.S. Department of Defense book *The Effects of Nuclear Weapons*](#)
- ◆ [1957 edition \(low quality 30.6 MB PDF file\) of entire U.S. Department of Defense book *The Effects of Nuclear Weapons*](#)
- ◆ [1962/64 edition \(high quality 188 MB PDF file\) of major revised sections in the U.S. Department of Defense book *The Effects of Nuclear Weapons*](#)
- ◆ [1962/64 edition \(high quality 43.8 MB PDF file\) of 74 pages of subsequently deleted material dealing with thermal ignition of houses at nuclear tests and civil defense countermeasures chapter, from the U.S. Department of Defense book *The Effects of Nuclear Weapons*](#)
- ◆ [1977 edition \(single 36.8 MB PDF file\) of U.S. Department of Defense book *The Effects of Nuclear Weapons*](#)
- ◆ [Bill Forstchen, "One Second After" book about EMP attack risk and its effects on USA.](#)
- ◆ [U.S. Department of Energy Opennet Documents Online \(includes many Nevada and Pacific nuclear test reports as PDF files\)](#)
- ◆ [Defense Technical Information Center \(DTIC\)'s Scientific and Technical Information Network \(STINET\) Service \(other declassified Nevada and Pacific test reports\)](#)
- ◆ [Highlights from ABM testing history](#)

◆ THAAD Goes Another ABM Test

◆ Alex Wellerstein's *Restricted Data* blog contains some interesting news (but beware of his uncritical use of unobstructed dry desert and nude skin thermal radiation and other effects predictions from the 1977 edition of Glasstone and Dolan; he deletes critically objective comments and pretends that honest criticisms of propaganda as being ignorant deception are rude as an excuse for ignoring the facts and refusing to engage in objective discussion of controversial aspects of this topic; basically if you pay homage and engage in groupthink bias you may be tolerated).

◆ Carey Sublette's *Nuclear Weapon Archive* (it contains errors from Chuck Hansen's compilation, and it is concentrated on bomb building, not on civil defence countermeasure evaluations done at nuclear tests; note that Chuck Hansen's books and CDs give a false quotation from Neil O' Hines's book *Proving Ground* on the effects of the 1952 Mike explosion on nearby Engebi Island, where Hines later in the book states that the native rats in fact *survived the intense close-in blast, heat and fallout under a few unches of soil, despite the initial ignorant belief that they could not have survived!!!*)

- Quantum Field Theory
- Los Alamos Science journal
- Excellent particle physics gauge theory (fundamental force interaction) issue of Los Alamos Science journal
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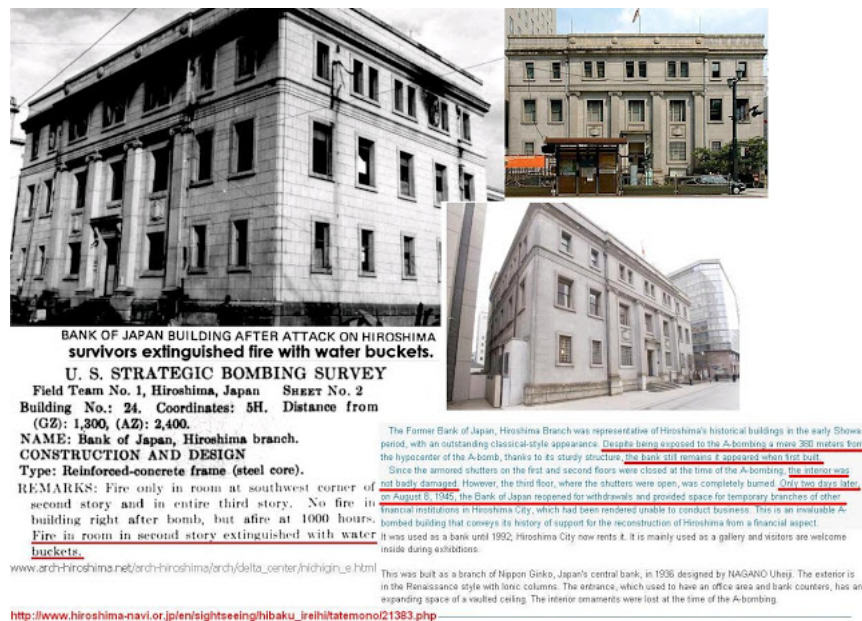
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The Bank of Japan, Hiroshima, survived 380 m from Ground Zero, within the firestorm area, when fires were extinguished by water buckets by its survivors, the majority of people in the building having survived. Secret US Strategic Bombing Survey report proves civil defense for modern concrete buildings is effective. The building was reopened as a bank on 8 August, merely two days after nuclear attack, and continued in use as a bank until 1992. It remains in Hiroshima. This beautifully designed and sturdy reinforced concrete building was designed in 1936 by Nagano Uheiji.